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AUSTIN SMITH, M.D.

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TREATMENT OF MALIGNANT CUTANEOUS LESIONS

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Statistical evaluation of results in the treatment of malignant cutaneous lesions is scientifically impossible. Except for superficial small epitheliomas on fairly smooth areas of glabrous skin, all lesions differ in some respect. In deciding the method of treatment in any particular case, the following factors must be considered: 1. The age and general condition of the patient, including the mental status. With many patients, it is desirable to treat the lesion when the patient is first seen. This is especially true when an emotional anxiety state caused by diagnosis of cancer exists. Elderly infirm patients are frequently unable to carry out a protracted schedule of treatment. 2. The accessibility of the patient to proper treatment. When he must travel long distances from home to office or clinic, two to seven trips a week are often impossible. If a one treatment method is available, with results comparable to any other method, the single treatment should be the method of choice. 3. The anatomic location of the malignant lesion. This is important from several viewpoints. The cosmetic result from treatment is sometimes of paramount importance, more so in females than in males. The first thought must always be to use the method of treatment that will yield the highest percentage of cures with the least disturbance in the continuity of tissue. It is at this point that many differences of opinion are expressed. Many of these disagreements are the result of bias and unfamiliarity with methods other than the favorite method of the sponsor.

Certain methods of treatment, which produce an apparent excellent cosmetic result, 5 or 10 years later give rise to disfiguring sequelae that are difficult and sometimes impossible to repair. Cosmetic appearance and the maintenance of structural continuity should never be considered paramount to the histological cell type of growth. If microscopic study reveals immaturity and infiltration, the question of cosmetic appearance should be entirely secondary to the cure of the patient. This consideration often applies to lesions contiguous to or in continuity with mucous membrane surfaces of the mouth, nose, eyelids, anogenital area, and ears. Wholly inadequate methods are often used in such circumstances, particularly superficial radiation therapy of a fairly early infiltrating immature squamous cell epithelioma at any mucocutaneous junction, or surgical removal of an infiltrating basal cell epithelioma on the nose, the ala nasi, or the adjacent upper lip, where pseudopods are sometimes present. In cutting across the pseudopods, a deep, infiltrating recurrence results, which is difficult and occasionally impossible to cure. In these cases, a destructive form of therapy must be used to give the patient the best chance of survival, irrespective of the immediate cosmetic result. Later, if it is necessary, plastic repair can produce a satisfactory cosmetic result. In handling cases showing an early infiltrating immature squamous cell epithelioma, the initial treatment is usually the deciding point of success or failure. If the physician is irresolute and administers an ineffectual treatment, it is sometimes too late to accomplish a cure afterward. Proximity of the lesion to cartilage, tendon, and bone must always be considered. Although some good results have been secured with radiation treatment over cartilage, bone, and tendon, generally speaking, wide scalpel surgery or electrosurgery, produce the best results. This question is closely related to the factor of adequate blood supply to promote healing after treatment. There are many areas on the body over cartilage, tendon, and bone where a cancerocidal dose of radiation may lead to long-continued necrosis and ulceration, with failure to heal for many months.

The ability of the patient to pay should never be a consideration in the treatment of any form of malignant cutaneous lesion. Potentially metastasizing lesions should always be treated by the method or combination of methods judged most likely to result in cure. Fortunately, the vast majority of cutaneous lesions are superficial and benign and can be cured in a number of ways, including scalpel surgery, electrosurgery, chemosurgery, and radiation. Without any demonstrated scientific superiority in results, the use of a modern operating room, with or without a hospital bed, in the handling of the ordinary uncomplicated noninfiltrating basal cell epithelioma is unwarranted and uneconomical, and results in unnecessary expense for the patient. Treatment of equal or superior value can be administered in the office or clinic.

Read in the Symposium on Cutaneous Malignancy, an Appropriate Segment of Dermatology, before the Section on Dermatology and Syphilology at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

CURETTAGE AND BIOPSY

By training and experience, the dermatologist is superlatively qualified to recognize the earliest changes of malignant cutaneous lesions. The early recognition of a minute pearly nodule, with telangiectasia and a faintly raised pearly border, and the palpation of a small infiltrating nodule are part of the diagnostic acumen of any well-trained and experienced dermatologist. Curettage of large numbers of lesions, both nonmalignant and malignant, adds greatly to diagnostic acuteness. The proper use of the curette, both in diagnosis and treatment, yields information that can be obtained in no other way. Any method of treatment that employs preliminary curettage affords the operator valuable information regarding the depth of the lesion, especially in pockets and in lateral extensions, and it is exceedingly valuable in determining the extent of destructive treatment. This is especially applicable when using electrosurgery or chemosurgery. One of the valid criticisms of scalpel surgery and any form of radiotherapy is that not enough information is available regarding the exact extent of the lesion. I have seen many examples of the importance of this factor in failures from treatment, both in my patients and in the patients of others. Scalpel surgery may cut across lateral extensions or miss deep pockets, whereas in radiation therapy the proper quality of radiation is not used, and the depth dose is not sufficient. With radium needles, accuracy of application cannot be accomplished.

A microscopic study of biopsy material is indispensable; however, the blind acceptance of a negative report of one specimen of tissue may sometimes lead to disaster. Through no fault of the pathologist, the percentage of error from examination of a single specimen is between 5 and 10%. Within one week, I had the frightening experience of having two biopsy specimens, taken by an experienced person, from two patients with typical early squamous cell epitheliomas of the lower lip, reported back by the pathologist as nonmalignant. There is no substitute for clinical experience and diagnostic acumen possessed by the dermatologist in handling dangerous early metastasizing epitheliomas. Too often, valuable time is lost waiting several weeks for a second biopsy and a microscopic diagnosis.

In addition to the above-mentioned mucocutaneous lesions, there are two other early metastasizing lesions in the diagnosis of which sole reliance on a single biopsy specimen, and in some cases several biopsy specimens, may have tragic consequences; for example, in cases of Paget's disease of the nipple, biopsy must always include a segment of the nipple itself, down through the full thickness of the nipple. Biopsies of skin areas are notoriously apt to give negative results insofar as malignancy is concerned. The second lesion in this category is the very early development of malignant melanoma in a pigmented nevus. Pathologists are well aware of their inability to distinguish the line between nonmalignancy and malignancy and, of necessity, tend to err on the side of positive malignancy. Here again, dermatologists can be extremely valuable in clinically recognizing the localized, faint, translucent, pearly border of malignant change. Because of early metastasis with a fatal outcome, suspected lesions should always be widely removed, irrespective of a negative microscopic examination of a single piece of tissue, I have never seen a case in which biopsy could be incriminated as the cause of metastasis. The normal movements of the tissues plus the inevitable trauma of everyday life are of greater importance.

TYPES OF THERAPY

The straight scalpel treatment of malignant cutaneous lesions has its advocates among surgeons, especially the cancer surgeon, and some dermatologists. This resurgence in favor of scalpel surgery has been brought about through the teachings of wide excision of the primary lesion and operations in continuity to remove lymphatics, regional glands, and other structures. Finally, some surgeons maintain that wide excision, followed by plastic repair, maintains greater functional integrity and secures a better cosmetic result. Most cancer specialists today will readily admit that there is a large place for radical surgery in all cases of radioresistant tumors, such as malignant melanoma, Paget's disease of the breast, or where bone or cartilage are involved. There are, however, many expert radiologists and dermatologists who will not concede that radical surgery is routinely indicated in cases of radiosensitive tumors, in which the percentage of cure with radiation is equivalent to that of surgery. It is the author's opinion that radical surgery has its place in properly selected cases but that it has no demonstrable superiority over properly applied radiation in radiosensitive tumors. Scalpel surgery should always be used when wide removal of a primary lesion is advisable, as in the case of malignant melanoma, Paget's disease of the breast, large destructive basosquamous cell epitheliomas of the external ear, or lesions located over bone, cartilage, or tendon, which may yield very slow-healing chronic ulcers, when treated with radiotherapy, electrothermic destruction, or chemotherapy. This applies to lesions of the scalp and forehead and many fairly large lesions on the hands and feet and over other bony cartilaginous prominences. For the vast majority of lesions, however, other methods of treatment yield comparable and frequently superior results, with less risk of recurrence and entirely satisfactory cosmetic results, at far less expense. Scalpel surgery inevitably has failures in the same type of case in which it had failures 30 years ago. Pseudopods and infiltrating strands of malignant cells will be cut across, and deep recurrent infiltrating nodules will result, presenting serious problems in treatment. These cases are becoming commoner.

Electrothermic destruction, in which electrodesiccation, coagulation, and cautery are used, has had its advocates for more than 40 years. This method of treatment has the following advantages: 1. It can be used immediately in most cases, which is of great importance in handling elderly infirm persons and those coming from long distances. 2. It is a simple office or clinic procedure for the majority of cases and, therefore, relatively inexpensive. 3. Operative complications are at a minimum, since nearly all patients are ambulatory and fairly free of pain and discomfort. 4. Because of accuracy of employment and the combined use of the curette, the percentage of cures is at a maximum. The late cosmetic results are excellent, except in a small percentage of cases. In some cases hypertrophic scars result, which can and should be treated with radiation. In extensive deep lesions, when disfiguring contractile scars are produced knowingly, plastic repair can be accomplished after sufficient time has elapsed to be certain of cure. In some lesions, the use of the flat cautery is superior to other methods, particularly in the large flat superficial basal cell epithelioma, occurring either singly or in large numbers. After curettage, with an exact outline of the advancing border, an ironing out of the lesion with a blunt cautery is extremely accurate. Destruction through the full thickness of the corium is unnecessary in many cases, and a thin atrophic scar results.

During the past 2 years, I have been comparing the late 5 and 10 year cosmetic results obtained with electrothermic treatment with a similar group of lesions treated with radiation 5 to 10 years before. While it must be admitted that in many cases radiation yielded remarkable cosmetic results, nevertheless, there are too many late sequelae from radiation that counterbalance the apparently fine cosmetic results from this therapy and that end in atrophy, telangiectasia, and possibly ulceration 5 or 10 years later. From the literature and from personal experience, it is evident that in approximately 5% of patients treated with radiation there is some degree of late necrosis even in the most competent hands. It must be admitted that radiodermatitis presents a more formidable problem than does a hypertrophic scar of similar extent. In lesions in which radiation or electrothermic methods can be used with equal curative results, in the long run, electrothermic methods are superior. The disadvantages of electrothermic treatment of malignant cutaneous lesions include: (1) pain of a local anesthetic; (2) discomfort of a healing wound; and (3) the production of some degree of scarring, which is often, with the lapse of time, unnoticeable.

Chemotherapy of malignant cutaneous lesions, as developed by Moh, and more recently modified by Lunsford and Allington, offers, theoretically, a superior method of treatment for most of these lesions, except when wide surgical removal is indicated. There is no question that microscopic control of destructive treatment has yielded results in many cases of serious infiltrating epithelioma that were unobtainable by any other method; however, use of this method, with its painstaking, time consuming elements, seems entirely unnecessary in the routine handling of most malignant cutaneous lesions. It seems to be applicable to less than 5% of the epitheliomas seen in office and clinic practice. It should be of value in all types of recurrent epitheliomas, especially those involving the nose, ala nasal folds, upper lip, and infiltrating lesions about the orbit. If the modification of Moh's method, as proposed by Lunsford and Allington, proves practical, it is a method that should be available to all medical centers.

The use of x-rays has been extremely popular in the treatment of malignant cutaneous lesions for more than 40 years. Dr. Lyle Kingery, at the University of Michigan, was the first to call attention to the advantages of saturation treatment. X-ray therapy had a great fall in popularity during the 1920's for various reasons which may be summarized as follows. 1. The single or double dose method of treatment was found inadequate in too large a percentage of cases. Also, intervals of one to four weeks between treatments, while suppressing the growth, failed to cure in a high percentage of cases. This type of treatment also led to late severe radiodermatitis. 2. Many lesions were found to be radioresistant to the technique used. 3. Too many physicians had x-ray machines, but not much experience in treating malignant cutaneous lesions. Although many excellent results were secured, especially by wise and experienced persons, the results on the whole were not satisfactory. This led to the widespread use of electrothermic methods in many centers, which, as pointed out above, have many points of superiority over other methods at the present time.

After Coutard, the saturation method of treatment became popular in 1934 and 1935, and since that time many modifications have been adopted. I have used most of the varying techniques, from daily treatment for 13 days and 39 $\overset{\infty}{\mathrm{r}}$ units, to biweekly treatments for 4 weeks, or 8 treatments for a total of 8,000 r. In analyzing my results over a 15 year period, I have come to the following conclusions. 1. There must be a careful estimation of the extent and depth of each lesion. The size of the field and the quality of radiation must be gaged accordingly. Radiation with a half value layer of less than 1 mm. Al should not be used for lesions estimated to extend, at any point, more than 2 mm. below the surface. There are, at present, too many physicians using the same quality of superficial radiation for all malignant cutaneous lesions. 2. The total dose must vary, depending on the size of the lesion, the quality of radiation, and the time over which the saturation is maintained. It is my definite opinion that frequent treatments in an optimum period of approximately three weeks yield not only the best immediate results but also the most enduring late results, without disastrous sequelae. Twenty treatments in 20 days, with a total of 6,000 r yield better results than 10 treatments in 10 days of 6,000 r, or 4 treatments in 10 days of 1,500 r each for a total of 6,000 r. Individual doses of more than 600 r for a total of more than 5,000 r will cause considerably more atrophy and telangiectasia at the end of 5 or 10 years than will the same total dosage given in daily increments of 400 r. It is apparent that individualization of cases is necessary. When x-ray therapy is used, the patient must be accessible for at least three or four days a week for a period of two to four weeks. That any deviation from a schedule inevitably reduces the percentage of cures is a serious criticism, which rightly or wrongly discredits the method when results are analyzed. 3. X-ray therapy is, in most instances, unsurpassed in results by any other form of treatment for infiltrating lesions that are radiosensitive. This is particularly true in infiltrating basal or squamous cell lesions about the head and neck, in which any type of surgery results in disfigurement, but in which radiation, in expert hands, yields a high percentage of cures, with far more acceptable cosmetic results. In this group of cases, however, the most violent debate rages as to the method of choice. The surgeons favoring use of the scalpel, wide excision, and when necessary, an operation removing the draining lymphatics and regional nodes in continuity, maintain that this is the most rapid method, gives the highest percentage of cures, and in the long run, with plastic surgery, leaves less disfigurement. Those who advocate electrothermic methods maintain that the immediate destruction of the primary growth, without any possibility of seeding and recurrent deep nodules that follow scalpel surgery, is the method of choice. Competent radiologists and dermatologists maintain that their curative results are just as high, with less mutilation, hospital expense, and time lost from work. Only time and experience will settle this problem.

The use of x-rays, even in the most experienced hands, has the disadvantages that (1) the patient must be accessible for two to four weeks; (2) occasionally the extent and depth of the lesion cannot be estimated, even by the most expert; and (3) disastrous late sequelae occur in a definite percentage of persons and sometimes when least expected.

The use of low intensity radium needles in the interstitial treatment of malignant cutaneous lesions is extremely popular in some parts of the United States, particularly in the Southwest and is frowned upon in other places. The use of 1 and 2 mg. needles with a high percentage of gamma radiation allows an entirely different technique than that of the old high intensity needles. The proponents of this method claim superiority of the method for patients who come long distances and who must return home after not more than one day's absence. They are then able to return in seven or eight days for removal of the needles. For farmers and ranchers, this offers an ideal method. The low intensity needles, with a high gamma ray output, have eliminated acute necrotizing reactions, produced a homogeneity of radiation in a controlled field, and eliminated to a large extent damage to cartilage, tendons, and bones. In the hands of the experts, there are many satisfactory results, and Martin has obtained superior results in all types of infiltrating carcinoma and lymph node metastasis. Those experienced in treating cancer with radiation, who oppose this method, do so because (1) their patients are accessible for two to four weeks, (2) they believe that everything that can be achieved with interstitial radiation can be achieved through the external application of x-rays, and (3) they feel that x-ray therapy can be more accurate in extent and depth than therapy with interstitial radiation.

SUMMARY AND CONCLUSIONS

It is evident that there are a number of methods for the treatment of malignant cutaneous lesions that have their advocates and opponents. Each method has its particular field of usefulness, and each method also has its limitations and restrictions. The expert will employ the method that, in his hands, yields the most rapid, sure, and least discomforting form of treatment. In the long run, it is the individual physician, and not the particular method, that is of greatest importance. It must also be true that violent espousal of one method of treatment to the almost complete exclusion of other methods of treatment is not warranted or justified by the facts.

In my opinion, in the majority of malignant cutaneous lesions, the use of thorough curettage followed by electrothermic destruction is favored, whenever possible, over all other methods, because (1) curettage is extremely valuable, not only in diagnosis but in determining depth and extent of the lesion; (2) results are immediate, requiring a minimum of visits to the office or clinic; (3) when necessary, plastic repair can be performed 6 to 12 months later; and (4) the late 5 and 10 year results are excellent.

There are special indications for the use of scalpel surgery, such as in Paget's disease of the breast, malignant melanoma, and other cases in which operations in continuity with draining lymphatics are desirable. There are also special indications for radiation therapy, especially in the case of radiosensitive malignant lesions that are infiltrating and when cosmetic results are of paramount importance. Local chemotherapy is especially valuable in selected cases.

71 North St.

RADIUM IN MALIGNANT CUTANEOUS DISEASE

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and
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Radium may be used in treating skin cancer in the form of a pack or plaque or in the form of needles applied interstitially. The use of the packs (or plaques) has no advantage except in rare instances and will not be discussed. It is our opinion that radium used for malignant cutaneous disease serves best when used in needles applied into the lesion.

We have used two interstitial techniques with needles for a number of years, namely, (1) a short-time high-intensity method and (2) a long-time low-intensity method. The first has been described in a previous article [1] and will be discussed only briefly here. The short-time high-intensity technique (fig. 1) refers to the use of needles containing 10 mg. of radium, 19 mm. in length, with a wall filtration of 0.3 mm. of platinum. Their active length is 12 mm. These are inserted at the base of a skin cancer and usually placed 3 mm. apart. They are arranged in the following ways:

1. They can be arranged in a triangle about the border of small lesions. 2. They can be arranged through and through a small tumor at its base. Sometimes the skin underlying the ends of the needles is protected with a half-moon-shaped piece of lead foil held in place with adhesive strips. 3. They can be arranged in parallel rows, unless the center two-thirds or active portion of the needle does not extend 2 to 3 cm. beyond the border of the tumor. In such instances, another insertion is made at right angles to the border of the lesion, closing one or

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Read in the Symposium on Cutaneous Malignancy, an Appropriate Segment of Dermatology, before the Section on Dermatology and Syphilology at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

[1] Lehmann, C. F., and Pipkin, J. L.: Interstitial Radium Therapy: Description of a Short Intensive Technic, A. M. A. Arch. Dermat. & Syph. 63: 312-322 (March) 1951.

both ends as the need arises. 4. Another possibility is a rectangular or hexagonal arrangement. If more than four needles are thus arranged, the needles are placed in the center of the lesion 5 mm. apart. Their distribution varies with the intensity desired. We have learned that, if we want an intensive dose, we should place the needle walls as close as 3 mm. apart (4.3 mm. between the needle axes).

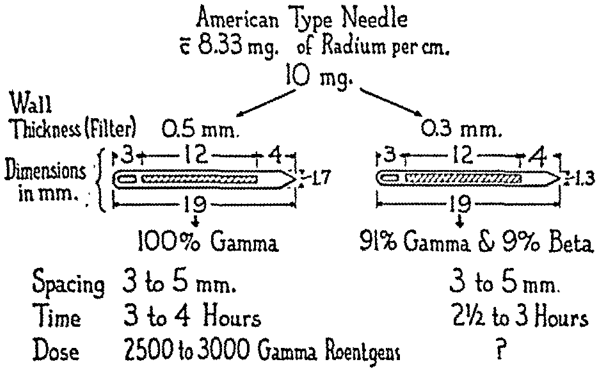

Fig. 1.—Diagram of short-time high-intensity technique of radium therapy of malignant cutaneous disease.

In most skin cancers arrangement of the needles in one plane in the base of the lesion is sufficient. If the carcinoma is projecting more than 0.5 cm. above the skin level, it may be trimmed down by the knife or endotherm cutting current, so that it is only necessary to treat with needles in one plane. After the needles are placed, a strip of adhesive tape is put over the lesion so that it fixes the end of them. This is sufficient to hold them in place.

No shielding is used except near the eye or on the lip. A strip of lead is placed on top of the lesion if necessary to prevent a reaction on an opposed surface; for instance, if the needles are placed on the lower lip, the lesion is covered with lead to prevent a reaction on the upper lip. Lead foil 3 mm. thick is used to cover the area that is being treated.

This short intensive technique uses beta and gamma rays of radium. The rays emitted through 0.3 mm. of platinum are 91% gamma and 9% beta.[2] Needles with filtration of 0.3 mm. of platinum are left in place for 2½ to 3 hours. If all beta rays of a 10-mg. needle are filtered out by the use of 0.5 mm. of platinum, the treatment time would have to be extended to 3½ to 4½ hours, depending on the total amount of radium used (fig. 2). We do this occasionally, and include it under the short-time technique.

ADVANTAGES OF THE SHORT INTENSIVE TECHNIQUE

The short intensive method has certain advantages in the treatment of small or early skin cancers. 1. It can be an office procedure and does not necessitate hospitalization, thus saving hospital beds and money to the patient. 2. Being given in a single treatment, it saves the patient repeated trips, which are usually necessary in administering other forms of radiation given in a fractionated, protracted series of treatments. This is a distinct advantage to patients who have to travel distances to a treatment center and in treating the aged or crippled (who have difficulty in getting to a physician). 3. Because of the short treatment time, it is an economical use of radium. This is of advantage in clinics where there may be a waiting list for radium. 4. Because of the short length of the needles, it affords a method of treating lesions in certain locations where shielding is difficult or when an intensive dosage of radiation is desired in a small area.

LOCATIONS OF SUITABLE LESIONS

Lesions in Eyelids and Canthi.—Small lesions on the eyelids, even those on the edge of an eyelid, are suitable for treatment. To protect the eye and to confine the reaction of the radium to a very small area, strips of lead foil (3 mm. thick) are placed under the projecting ends of the needles and on the surface of the lesion. A gold-plated eye shield is also placed in the conjunctival sac. This method of shielding filters all beta rays, and the gamma ray dosage passing through is not of sufficient intensity to cause even an erythema.

Lesions on the eyelids respond as well as lesions in the canthus. It is again emphasized that this technique is applicable only to the smaller, more superficial cancers. Infiltrating lesions in the inner canthus that extend along the orbital wall are not treated with the short intensive method.

Lesions in Sulci.—This technique is very suitable for treatment at the nasolabial and posterior auricular folds, where shielding for x-ray treatment is more difficult and more than one plane in the field is essential. This short intensive technique has been used advantageously in treatment of basal cell carcinoma in the concha or outer auricular canal.

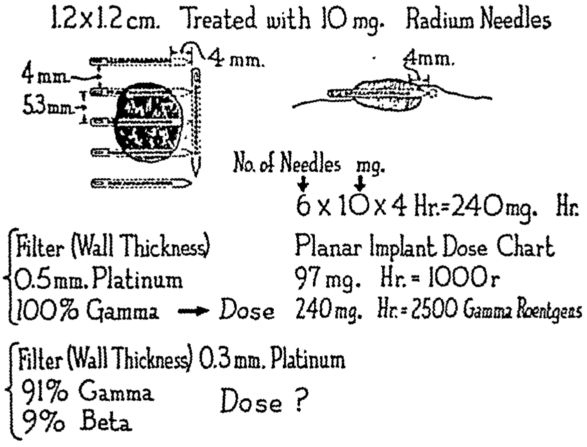
1.2x1.2 cm. Treated with 10 mg. Radium Needles
4 mm.
4 mm.
5.3 mm.
4mm.
No. of Needles mg.
6 x 10 x 4 Hr.=240mg. Hr.
Filter (Wall Thickness)
0.5mm. Platinum
100% Gamma → Dose
Planar Implant Dose Chart
97 mg. Hr. = 1000r
240mg. Hr.=2500 Gamma Roentgens
Filter (Wall Thickness) 0.3mm. Platinum
91% Gamma
9% Beta
Dose ?

Fig. 2.—Example of use of short intensive technique in treatment of a squamous cell carcinoma.

Lesions on Auricles.—Cancers on the external ear offer a problem at times when the cosmetic result is considered. The lesions that have not invaded cartilage are amenable to this technique in a high percentage of instances.

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[2] Stenstrom, W.; Quimby, E. H., and Pendergrass, E. P.: Report of the Research and Standardization Committee of the American Radium Society, Am. J. Roentgenol. 43:118-125 (Jan.) 1940.

LONG-TIME LOW-INTENSITY TECHNIQUE

The long-time low-intensity technique has evolved over the past 25 years and has been used by numerous workers. It has been popularized by Cade in England and numerous others in America.[3] It makes use of needles containing small amounts of radium that are left in place a long time (7 to 10 days). The strength of the needles averages about 0.66 mg. per centimeter, and the thickness of their walls varies from 0.5 to 0.8 mm. of platinum. A shield of 0.5 mm. of platinum filters out 99% of the beta rays and 0.8 mm. filters out all but the harder gamma rays. It has been found that this technique of gamma ray radiation and the time-dosage relationship of one week's radiation with such needles produces as selective an effect as possible, i. e., a cancerocidal dose that produces a minimal amount of radiation damage to normal tissue.

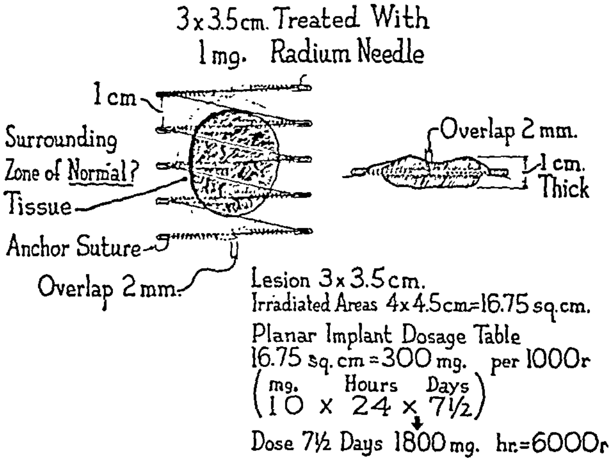

Fig. 3.—Diagram of use of the long-time low-intensity technique in treatment of basosquamous cell carcinoma.

This technique is selected for treatment of deeply infiltrating lesions or extensive lesions that vary from 3 to 5 cm. in their longest diameter. (Lesions that cover a larger area can be more expeditiously treated with x-rays.)

It is also used for treatment of lesions with highly differentiated cells in locations where lesions notably are resistant. Experience has taught that skin cancers in certain locations are resistant. The explanation is not always due to the grade of the cancer cell but to other factors, too. One of these may be the "cancer-bed," as it is known that as good a selective effect cannot be secured in a cancer in a poorly vascularized bed as in one in a bed that has abundant vessels. For instance, most lip cancers are well differentiated and, based on the "grading" factors, should be highly resistant. Yet almost all of the smaller ones respond satisfactorily to the "short-time" technique. On the contrary, cancers on the sides and back of the neck (whether basal cell, basosquamous, or squamous cell) are more resistant than lip cancers. It is on the extremities, particularly on the back of the hand, that the "cancer-bed" influence is seen. It is here particularly that the selective effect of the long-time low-intensity technique is best illustrated. If one treats this with soft rays, the scar is less supple and is apt to break down easier and does not withstand physical trauma as well as the scar resulting from treatment with gamma radiation (the long-time low-intensity method). In figure 3 the long-time low-intensity technique in a basosquamous (or squamous cell) carcinoma is outlined.

TECHNIQUE

The needles that we have used for this technique contain approximately 0.66 mg. of radium per centimeter. Their wall thickness (filtration) is 0.5 mm. of platinum and their over-all length is 27.7 cm. (fig. 4). They are placed in tissue 1 cm. apart. The ones on the outside of a lesion are placed at the border of the palpable growth (so as to radiate well beyond the cancer). If the ends of the active portion of the needle do not include the palpable induration, one or more are inserted at right angles so that a proper dosage is distributed throughout all of the cancer. They are placed in the vast majority of instances in a single plane at the base of the lesion. Most skin cancers treated with radium by us are not thicker than 1 cm. and do not call for more than a one-plane insertion. The needles are inserted so that their eyes are out of tissue, and they are placed either in the base or in the borders where there is enough tough stroma to support them. They are then fixed in place by suturing.

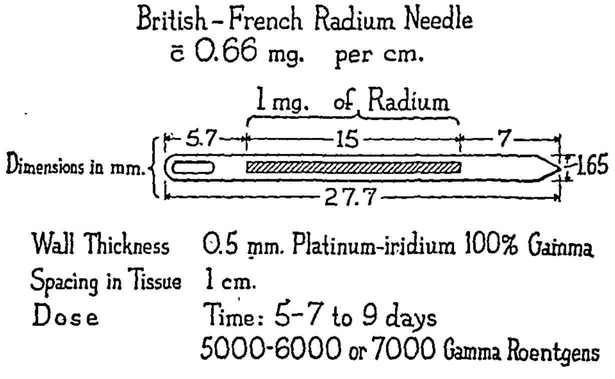

Fig. 4.—Diagram of needle used in long-time low-intensity technique of radium treatment.

Various methods of suturing may be devised; each needle may be anchored individually, or the sutures may be criss-crossed over the top of the growth by insertion of the needles alternately in opposite directions. Thus a mattress of sutures and needles is formed, and anchoring sutures are used at various places where there is normal firm skin to hold. Usually fine wire suturing material is used.

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[3] Cade, S.: Malignant Disease and Its Treatment by Radium, ed. 2, Baltimore, Williams & Wilkins Company, 1948, vol. 1, p. 43. Martin, C. L.: Small Radium Needles Versus Radon Implants, Am. J. Roentgenol. **27**: 240-248 (Feb.) 1932. Martin, C. L.: Weak Radium Needle Technique in Carcinoma of Cheek, ibid. **43**: 226-236 (Feb.) 1940. Martin, C. L.: Layer Technique in Radium Needle Therapy, ibid. **48**: 377-383 (Sept.) 1942. Martin, C. L., and Martin, J. A.: Treatment of Advanced Cancer Involving the Ear, ibid. **60**: 750-757 (Dec.) 1948. Cole, H. N., and Driver, J. R.: Radium Dosage and Technique in Carcinoma of Skin, with Special Reference to Interstitial Irradiation with Platinum Iridium Needles, ibid. **33**: 682-689 (May) 1935. Shelmire, B., and Fox, E. C.: Small Radium Needles in Treatment of Malignant Cutaneous Tumors, Arch. Dermat. & Syph. **34**: 862-872 (Nov.) 1936. Lamb, J. H., and Eastland, W. E.: Cancer of Lower Lip: Treatment with Radiation, J. A. M. A. **117**: 600-607 (Aug. 23) 1941. Howell, J. B.: Cancer of the Center Face, South. M. J. **43**: 283-291 (April) 1950.

The dosage given to skin carcinomas by this technique varies from 4,000 to 6,000 γ r. In calculating doses in gamma roentgens, one can use tables devised by Paterson and Parker, one that is readily available being in the book "Physical Foundations of Radiology." [4]

When the interstitial application of radium is selected as the method of choice for the malignant cutaneous condition at hand, a decision must be made as to which of these techniques is most suitable. The size, the shape, the depth, the location, the type, and the grade of the neoplasm influence the selection. The tumor bed and the adjacent structures also influence this. Previous treatment, scar tissue in or around the new growth, the presence of other disease processes adjacent to the neoplasm, and the proximity to vulnerable structures as well as the physical aspects of the tumor and the surrounding tissue all influence the choice. The patient's age, physical and mental condition, and ability to travel also determine which technique is used.

AREA TREATED

In treatment of a malignant lesion by radiation, the question always arises as to how large an area is to be treated. As a rule the larger the lesion (in area) the wider the border around it is radiated. A border varying in width from one-third to one-fourth the largest diameter of the lesion is usually treated, the maximum border usually being not over 0.5 cm. and the minimum not less than 3 mm. All of the macroscopically abnormal skin around the lesion is treated, such as borders showing hyperkeratosis or telangiectasia.

In producing anesthesia, 2% procaine hydrochloride is used as an anesthetic in the Cook's dental syringe with a 1 or 1½ in. (2.5 to 3.8 cm.) gage needle. This facilitates the infiltration of the anesthetic with very little pain and trauma. A small wheal is first made by intradermal injection 0.75 cm. outside of the surface outline of the tumor, and the long needle is thrust through the supposedly normal tissue, outside and parallel to the surface outline of the new growth. It is better to infiltrate around and under the tumor rather than into it, as this distention distorts the tumor; after the anesthetic is absorbed, the needles will lie closer together than when initially implanted.

At times cancerous tissue lying outside of the surface outline will be defined by this procaine infiltration. The soft cancerous tissue will give way, allowing the solution to leak into the tumor or the crater. The sudden distention of the tumor, visible leakage from the crater, or the sudden release of resistance on the syringe plunger indicates that the point of the needle is in the new growth; therefore the skin surface outline should be extended at this point. By replacement of the needle laterally and reinjection of the solution, the true confines of the tumor can be ferreted out. This technique has been very valuable to us in establishing the actual boundaries of the "iceberg type" of infiltrating carcinoma.

The infiltration of the normal skin with the anesthetic around the tumor elevates a peripheral plateau, making insertion of the needles horizontal to the skin and to the base of the tumor an easy procedure. Without this surrounding elevated plateau and a ballooning up of the tumor, it is difficult in some sites to introduce the needle from a flat surface through a small skin puncture so that it lies at a depth of 0.5 cm. parallel to the surface and the tumor base. If the tumor is of the exophytic type and more than 1 or 1.5 cm. thick, it may be reduced by electrosurgery to the proper thickness for a single row of radium needles placed parallel and horizontal to the surface and the tumor base.

RADIONECROSIS

The primary object of radiation therapy (whether by x-rays or radium) is to kill all of the cancer cells. To do this in using radium, one must arrange the needles so that the minimal dose in any part of the lesion is cancerocidal. There are certain rules to follow that give fair assurance of this result. However, experience also teaches this, and one's technique improves with practice. If the physician is overzealous in dosage, he is apt to have more radionecrosis of tissue than he should, and he defeats the second object of radiation therapy. This is to get as selective an effect as possible.

Radionecrosis may appear early or late. An ulceration after the cancer sloughs away that does not heal in a few weeks (five to six) is due to overdosage, and the radiation treatment in such an instance is no less than actual cauterization. In such an event, the effect from electrocoagulation or actual cautery is better.

Early radionecrosis is more of a hazard with beta radiation than with gamma radiation. If it occurs, it is usually due to placement of the needles too close together, or leaving them in place too long. Late radionecrosis may occur following use of any method. It usually is seen in areas where there is scanty blood supply, however, such as on the back of the hand, or after treatment of a cancer in scar tissue. In such an event, the scar needs to be excised and a skin graft made.

Frequently one can anticipate late radionecrosis, and in such an event should so advise the patient. In such a case the question naturally would be advanced: why use radium at all, and not go ahead with extensive surgery and plastic repair? This is logical. However, it is our opinion that if radiation therapy is used for cancer destruction, it is best to use it preoperatively rather than postoperatively. When used thusly, it frequently reduces the extent of surgery, which is of particular advantage when a cosmetic question is raised, as it sterilizes the surrounding field of cancer cells.

SELECTION OF TECHNIQUES

To avoid radionecrosis as much as possible the short intensive method is used on the smaller carcinomas, usually those less than 1 cm. in diameter and not over 0.5 cm. in depth. There is a limit in the amount of short intensive radiation that should be given to normal structures, and we rarely use over 5 10-mg. needles for this beta radiation. If a larger area is to be treated, it is best to use gamma radiation with the long-time low-intensity technique.

In regard to radium versus x-rays, we hold no particular brief for radium. We freely admit that equally good results can be obtained with x-rays when the proper technique is selected for the individual case. It is our feeling that there is less chance of missing cancer cells around the borders in using radium interstitially than in treating with x-rays. We select radium in most of our cases because of the saving to patients in time and number of visits.

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[4] Glasser, O.; Quimby, E. H.; Taylor, L. S., and Weatherwax, J. L.: Physical Foundations of Radiology, New York, Paul B. Hoeber, Inc. 1947, p. 310.

EXPENSE OF RADIUM SERVICE IN AN OFFICE

One question that is frequently asked about instituting radium therapy is what the expense would be. This item is not prohibitive. For an average dermatological practice, one can take care of most malignant skin lesions with 6 10-mg. needles (a total of 60 mg.) and 6 1-mg. needles (a total of 6 mg.)—the cost of which would be well below the cost of an x-ray machine.

The cost of maintaining a radium-treatment service lies not so much in the cost of radium as in the cost of office space devoted to it. One should have a suitable "parking" room with properly leaded walls in which to place patients treated with radium, and these rooms should be as far from the main activities of the office as possible so as to get the advantage of distance in protection of office personnel from stray radiation. Other precautions include properly leaded storage containers for the radium. These and also all other precautions necessary for protection of the operator and technicians from excessive radiation are important factors to consider if a dermatologist institutes radium therapy in his armamentarium against skin cancer.

RESULTS

The end-result of radium therapy to carcinoma of the skin is quite satisfactory. We have been using radium interstitially for 30 years and the long-time low-intensity technique for 19 years. Over these periods 8,892 skin cancers have been treated. A statistical survey based on five year cures in this series of cases was unsatisfactory owing to the following factors: (1) the high death rate in the elderly from intercurrent diseases during any five year period; (2) difficulty of a routine follow-up in the elderly; (3) the fact that some 3,000 of these lesions were treated less than five years ago and that sufficient time has not elapsed to include them in a series of five year cures; (4) lack of knowledge of histological diagnosis in all treated cases; and (5) change in the material in the last half of our experience so that the first half is not comparable. During the past 10 years the lesions were seen earlier and therefore were smaller and easier to handle. This is probably due to the educational campaign fostered by the American Cancer Society. There were fewer complications from maltreatment, and the lesions were more critically selected for radiation therapy during the last half of this period. Therefore, the following remarks must be considered as a personal interpretation of experience and not a scientific assessment based on accurate statistical data accumulated over this entire period.

In spite of the above objections, the end results are certain in a great number of these patients, as follow-up observations were requested five to six weeks after treatment, twice more at two month intervals, and then yearly. Many patients were observed months or years later and the result noted when they were seen for some other dermatoses or subsequent tumor. Spot-checking groups of consecutive cases for a given period of time reflects results and indicates certain trends from which definite conclusions can be drawn.

Cure Rate and the End-Result.—The cure rate and the end-result in regard to a serviceable scar obtained by a particular method of irradiation are influenced by the size, depth, location, and cell character of the lesion as well as the previous treatment, the cancer bed, the presence or absence of infection, and the age of the patient. These factors constitute the premise for the assignment of a particular method for the problem at hand; therefore they must be considered in assessing results.

In 1935 we estimated rate of cure from the long-time low-intensity method (which is used on the large radioresistant or previously treated lesions) at 80%; and the rate of cure from the short intensive method (which is used on the small superficial selected lesions) at 95%. In 1945 the cure rate with the first technique was 95%, and with the second method it was 97%.

A more critical analysis of our statistics gave us the following rates: The absolute cure rate (which is based upon all lesions, including untreated as well as treated) was 60% for the first five years of this series. In 1945, this had increased to 85%. This was not due to an improvement of technique, but to the fact that fewer advanced hopeless cancers were seen. The relative cure rate of all cases (which is based only on treated cases) was 90%. The net cure rate (which is based on treated patients after elimination of those dying of intercurrent diseases and those lost to observation) was 95%.

714 Medical Arts Bldg.

Malnutrition in Old Age.—Malnutrition is a . . . serious problem in old age. Only 20% of the men and women in my series over the age of 61 were moderately overweight, and only 10% could be called obese, whereas 30% of the men and 20% of the women were definitely under normal weight. Nutrition is easily assailed by many chronic infections and diseases that impose inactivity. The amount of weight lost by an edematous cardiac patient is surprising when compensation is restored. The demineralization of bones in plaster casts and on rest in bed is recognized; osteomalacia and osteoporosis are fairly common. But there are other enemies too, such as the absence of teeth and the presence of diseased or poorly placed teeth. Appetite changes when a job, with its regular hours and discipline, is gone. Sadness makes one person a skeleton and another a glutton. People who enter homes for the aged or public almshouses and eat with others who are like what they will soon become, have little zest in eating; so do those who have to eat alone, at home or in unfriendly restaurants. Alcoholism is resorted to by some aging people as a release from sorrow or loss of job. Food fads and fears find an eager audience in old people. Therefore, the prescription of a normal diet is proper, but it does not go far enough. Vitamin supplements are attractive. The really important therapy of malnutrition is unorthodox. It is independence, exercise, occupation, friends to eat with, a good place to live in and good care of disabilities.—R. T. Monroe, M.D., The Effect of Aging of Population on General Health Problems, *The New England Journal of Medicine,* Aug. 20, 1953.

DIAGNOSIS AND TREATMENT OF CARCINOMA OF THE EYELIDS

Eugene F. Traub, M.D., New York

Cutaneous cancer accounts for from 40 to 60% of all types of malignant lesions seen by the family physician. Carcinoma of the eyelid occurs in the older age group primarily; three-quarters of the patients are past 50 years of age. Men are slightly more susceptible to carcinoma of the eyelid than women; this is particularly true of the clinic groups. Of the facial epitheliomas, approximately 10 to 15% occurred about the eyelids,[1] although extremes of 2.73 to 55% were noted in various reported studies. According to Hasley,[2] 15% of all tumors of the lid are malignant. In all recorded series,[3] the greatest number of eyelid lesions were found on the inner canthus (table 1). The lower lid was also a common site for the development of lesions, particularly on its medial portion in the area toward the inner canthus. Four-fifths of all lower lid lesions were found there. Consequently, then, cancer of the eyelid is not an infrequent occurrence, but what makes it still more significant is the fact that more than one-third of the cases fail to be cured by primary surgery, irradiation, or both. In a fair percentage of cases, loss of sight occurred on the side of the affected eye. Enucleation because of invasion of the orbit was required in 4 of 82 of Robinson's [3] cases. This is largely due to the fact that, in advancing lesions, long slender strands of tumor cells emanate multicentrically through the lymphatics from the body of the lesion, "iceberging," for some distance to form what appear to be multiple foci of origin. This histological feature explains the persistent recurrence of tumors in this area after apparently thorough extirpation. It also makes therapeutic approach to lid lesions more difficult, because it requires more skill to effect a cure and it makes cure especially necessary in the initial treatment. At the same time, preservation of tissue and function is all important. The method of treatment for each case must, to a certain degree, be individualized to best protect the lens, cornea, lacrimal duct, and tarsal plate and to maintain lid margins and eyelashes.

ETIOLOGY

Irritation is an important factor to associate with the majority of cancers of the eyelids. Ill-fitting, irritating eyeglasses, especially those in which the nose piece is worn or rough, burns caused by the sun at the edge of rimless glasses, scars from burns of any origin (gasoline, ether, or hot grease), scars and irritation from repeated styes, coal tar derivatives (oil and petroleum) accidentally rubbed on the eyelids by mechanics and garage workers are all possible sources. Single injuries from shell fragments have been followed three years later by a basal cell epithelioma according to Marconcini.[4]

PATHOLOGY

With most cancers about the lids it is difficult to determine the exact site of origin, but frequently the mucocutaneous junction is involved. Most of the cases in my series apparently arose on the skin surface near the eyelid margin and then extended to the mucocutaneous junction early in development. This was also the experience of Martin.[5] In a number of patients, the growth appeared to have originated in or near the opening of the lacrimal duct. Basal cell epitheliomas may also arise from Meibomian sebaceous glands and more rarely from the glands of Zeis along the hair follicles according to Morax.[6] Small cystic adenomas along the outer aspects of the eyelids are considered to arise from the sweat glands of Moll. The squamous cell cancer may begin as a hypertrophic warty growth or a hyperkeratosis, which, after thickening, develops central necrosis, or as in this series it may arise from normal skin. In contrast to the basal cell epithelioma, this lesion develops rapidly. It is more apt to invade and destroy tissue, and, while it is capable of metastasizing to the regional lymph nodes, such a course is apparently not an early manifestation in lesions about the eyelid any more than it is in other early squamous cell lesions of the glabrous skin. Preauricular or upper deep cervical lymph nodes are first affected when metastasis does occur.

Although constituting a single histological and nosological species, the development of the basocellular epithelioma tends to take an extremely variable course so that it may present itself clinically in highly varied forms, such as nodules surrounding a cicatrix, an eroded surface, an ulcer with rolled pearly bordered edge, a pigmented or plain tumor, a cystic type lesion, a morphea-like plaque, or an invasive or fungating growth. Moreover, the types may coexist or follow one another. Even a squamous cell growth may develop in some portion of the tumor. Characteristically, the basal cell tumors grow extremely slowly and usually take months or years in their development. The invasive type, which extends downward and inward and readily invades bone or cartilage, grows somewhat more rapidly than most of the other basocellular varieties. In general it has been observed that the deeper the ulceration, the greater the degree of malignancy.

The so-called rodent ulcer, with either nodules or pigment, is the commonest of the group seen on the eyelids. It usually begins as a small firm nodule with a smooth shiny surface. At this stage it may resemble the intradermal nevus or "common mole" not infrequently seen on the lid margin. While the tumor slowly enlarges

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Because of lack of space, some of the tables have been omitted from The Journal and will appear in the author's reprints.

Read in the Symposium on Cutaneous Malignancy, an Appropriate Segment of Dermatology, before the Section on Dermatology and Syphilology at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

[1] Eller, J. J., and Eller, W. D.: Tumors of the Skin: Benign and Malignant, ed. 2, Philadelphia, Lea & Febiger, 1951, pp. 399-404.

[2] Hasley, C. K.: Roentgenologic and Dermatologic Aspects of Tumors of Eyelid, Society Transactions, Arch. Ophth. 25: 926-927 (May) 1941.

[3] Robinson, G. A.: Cancer of Eyelids, Am. J. Roentgenol. 38: 743-745, 1937.

[4] Marconcini, E.: Basal Cell Epithelioma of Eyelid Probably of Traumatic Origin, Arch. ottal. 55: 623-631, 1951.

[5] Martin, H. E.: Cancer of Eyelids, Arch. Ophth. 22: 1-20 (July) 1939.

[6] Morax, V.: Cancer de l'appareil visuel, Paris, Gaston Doin & Cie, 1926, pp. 1-136.

peripherally, there is a tendency for more rapid downward extension, particularly beneath the ulcerated portion. As further infiltration takes place, contracture of the lid, with resulting ectropion, may take place. Pigment may be a marked feature of some of these tumors causing them to resemble melanomas. In the invasive type of basal cell lesion, growth may extend deep into the orbital cavity and may eventually erode the skull bones. If located at the inner canthus, penetration of the thin osseous layer bounding the nasal cavity may occur and involve the internal structures of the nose. Rarely the tarsal conjunctiva is the site of origin of a carcinoma; in this case extension usually occurs over the rest of the conjunctiva and the tarsus is seldom penetrated or the skin involved. Squamous cell lesions, however, have a greater tendency to invade the tarsal cartilage.

DIFFERENTIAL DIAGNOSIS

Malignant lesions on or about the lids are most frequently confused with the "common mole" or intradermal nevus or the "warty" or verrucous lesions, especially of the seborrheic type. Chalazion may be mistaken for an adenocarcinoma of the Meibomian glands; hidrocystoma has, on several occasions, been mistaken for a malignant melanoma. The cystic type of basal cell epitheliomas has been thought to be a benign cyst, while the larger lesions seen in multiple benign cystic epithelioma often need microscopic differentiation. The ordinary stye or small furuncle in no way resembles a basal cell epithelioma, but the acutely inflamed and rapidly developing early squamous cell epithelioma does resemble and may often be confused with a simple pyogenic lesion. Irritated verrucous lesions must be carefully differentiated from squamous cell epithelioma. Xanthelasma is so distinctive that it offers no problem.

TREATMENT

There seems to be general agreement among all cancer specialists, including surgeons, that surgery should be avoided if possible in dealing with carcinoma of the lids. Even the removal of a small basal cell epithelioma of the lid margin would require hospitalization for surgical care and would generally involve more or less complicated plastic repair. The results obtained by even the most qualified surgeons, while they might compare favorably from the standpoint of percentage of cure, fall far short of the cosmetic appearance that may be achieved by other methods without either hospitalization or great discomfort to the patient.

For these reasons, I wish to emphasize methods other than surgery. Most of these demand irradiation of some type. The combination method is vastly superior to all others, on the basis of the results obtained by most workers. This method has the advantage of simplicity and efficiency and lacks most of the danger that might follow massive doses of radiation. It has still another very important feature, and that is that all finger-like extensions of the growth ("iceberging") are discovered at once and the field of subsequent radiation may then be absolutely and accurately delineated.

An excess of procaine (Novocaine) hydrochloride is intentionally injected directly under the lesion to lift it up and away from underlying structures. Biopsy is made at this time by simple scalpel excision. A pathological record is well worth while, even though most lesions can readily be identified clinically. Desiccation is used solely to minimize bleeding and to make follow-up curettement easier. Thorough curettement of the base and margins of the lesion is the most important part of the entire procedure. With experience, it is easy to know exactly when the entire field has been curetted free of tumor tissue; the new growth is always friable and scrapes away readily, whereas the normal tissue cells are tough and cause the curet to slip over them. The curet may be thrust into all small finger-like pockets, and once discovered they can be thoroughly cleaned out. Desiccation alone, lacking any sense of touch, never gives one this feeling of assurance. Once the boundaries of the lesion have been found, the exact field to be irradiated can easily be mapped. I believe that the occasional radiation failures occur because a field large enough to cover all such finger-like processes of the growth has not been used. Such radiation failure could, of course, be corrected by subsequent radiation treatment, but this causes greater tissue damage and is practically never necessary when the combination method is used.

The final step is irradiation of the open wound. This is usually done immediately after removal of diseased tissue. If there is excessive bleeding— there is seldom much, but sometimes oozing of blood does occur—the base of the wound may be superficially desiccated to stop it. Healing takes place more promptly, if this latter step can be omitted. The dosage of radiation required is the minimum one necessary to kill the few remaining cancer cells since no thickness of tumor remains to be penetrated. Either roentgen rays or radium may be used. Assuming the curettement has been ably accomplished, a dosage of 1,500 to 2,500 r, given with low voltage (100 kv.) unfiltered x-rays, is almost invariably sufficient. This is a one dosage, one treatment procedure. Provided the growth is an early one that has not been previously treated or neglected, this method should accomplish better than 95% cure with one treatment. Radium in equivalent dosage may be employed either interstitially or by surface application; however, when it is possible to completely remove the tumor, surface application generally suffices.

Probably a majority of dermatologists and radiotherapeutists use radiation therapy alone, and each one develops a more or less individual technique. Because of the excellent results achieved, I believe that several of these methods should be outlined. Ward,[7] using a high voltage load and almost uniformly 1 mm. aluminum filter, gave doses generally of either 3,000 or 5,000 r divided into 4 or 10 rather closely grouped treatment dates. His fields varied from approximately 2 to 7 square centimeters. His results were excellent not only because of the percentage of cures but also because of the fine cosmetic and functional results achieved. His lowest total dosage was 1,800 r. Others have used similar total dosage but with low voltage, unfiltered divided radiation.

Contact roentgen therapy, with its tremendous output and low depth dose together with the short exposure time, may prove valuable in treating eyelid lesions, but special equipment and techniques are necessary. According to Andrews,[8] the results of the treatments of epitheliomas with a Phillips tube are no better than, and even not so good as, those obtained with standard superficial therapy machines and unfiltered radiation produced by 60 to 100 kv. The end of the tube is of a size that an epithelioma only 1 cm. in diameter can be adequately exposed. The advantage is the small depth dose, less than 1 cm., makes it a suitable treatment vehicle for cancer of the eyelids. The policy of giving large doses of this type of radiation within a few seconds is a great advantage because the patient cannot hold the lid still for long. Grenz rays may be used, and though Eller[1] illustrates a 10 year cure he does not recommend the method in his textbook.

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[7] Ward, W. H.: Problem of Skin Cancer, Australian J. Dermat. 1: 157, 1952.

Radium treatment for lid lesions also has many exponents, and again procedures vary greatly not only in use of interstitial radiation instead of surface applications or employment of radon but in the exact methods of application of each. At first 5, 10, or even 20 mg. needles were employed for a relatively short period of time. More recently, Howell[9] and others found that far more excellent cosmetic and functional results were achieved using 1 to 2 mg. needles left in place for long periods (five to seven days).

According to Howell,[9] the use of low voltage x-ray therapy for superficial lesions of small size involving the central portion of the lower lid is an excellent procedure and is considered the treatment of choice by many. For infiltrating lesions of the canthi and lids, x-ray therapy is inferior to low intensity radium needle therapy. X-ray therapy frequently is followed by recurrences, and the depth dose received is often inadequate for lesions situated in the region of the inner canthus. It is in this situation that treatment with the low intensity radium needle has proved most valuable (table 2 and 3).

COMPLICATIONS OF RADIATION THERAPY

Because irradiation, employed either alone or as part of a combination treatment, seems to be the treatment of choice for the vast majority of cases of cancer of the eyelids, the dangers inherent in this remedy should be thoroughly understood. Effects of irradiation on the eye conjunctiva precedes the skin response by three to five days. The cornea shows remarkably little reaction to irradiation, but Martin[10] has described a loss of luster through the cornea with diminution in sensation followed rarely by ulceration three months after intensive radiation therapy. Glaucoma has been reported by Peter[11] after irradiation, but this must be an extremely rare complication as it is not generally reported. The iris, retina, and aqueous and vitreous humors do not appear susceptible to irradiation. The crystalline lens is very susceptible to injury by irradiation, although a period of 3 to 12 months may elapse before cataract becomes apparent. Cataracts following irradiation have been reported.[12]

The rapidity of onset and degree of opacity of irradiation cataracts depend on the dosage delivered to the lens and on the age and general susceptibility of the patient's eye to this type of insult. Cataracts produced by roentgen rays and radium appear similar to those resulting from infrared and ultraviolet light, and it is probable that latent injury produced by one agent would be added to that produced by the others. Lenses suffering from incipient cataract owing to senility or other cause would be more susceptible to progressive cataract than a normal lens. Many instances of neurodermatitis, atopic eczema, or congenital ectodermal dysplasia, accompanied with asthma, have been complicated by juvenile cataracts.

The threshold dosage productive of irradiation cataract does not appear to have been established according to the literature, although Kumer and Sallmann[13] warn against the delivery of more than an erythema dose of roentgen rays or radium to the eyeball. Cataracts may appear from six months to eight or more years after irradiation. It is also apparent that in many instances in

TABLE 2.—*Summary of Author's Cases*

No. of patients	33	....
No. of lesions	50	36 on eyelids
Patients with lesions on both eyelids	3	....
Combination treatment	28	Fulguration, curettement, and either x-ray or radium
Radium only	1	....
X-rays only	0	....
Electrodesiccation and curettement only	3	....
Sherwell cautery	4	....
No. cured in one treatment	31	....
No. receiving 2 treatments	4	....
No. requiring 3 or more treatments	1	....
No. of cases previously treated.	10	Lesion burned off 10 and again 3 or 4 yr. before (1 treatment) Two basal cell epitheliomas received many radium treatments over a period of 7 yr. (1 treatment) Patient received innumerable treatments with x-rays, radium, and desiccation over a 10 yr. period; received 2 treatments; and recently returned again with recurrence Five previous x-ray treatments with recurrences (1 treatment) Duration 6 yr.; lesion had been removed 5 yr. before but had recurred (1 treatment) Deep x-ray treatments followed by injections of penicillin (1 treatment) Previous electric needle treatment (2 treatments) 15 x-ray treatments without cure (3 treatments) Lesion treated 4 yr. earlier with x-rays and 3 yr. earlier with electric needle (2 treatments) Two previous unsuccessful removals (1 treatment)
Duration of apparent cure		
1-3 yr	23	....
3-5 yr	4	....
Over 5 yr	9	....
Lesions for which follow-up plastic surgery was desirable.	1	....
No. of squamous cell epitheliomas	5	....
No. of treatments to effect cure of squamous cell epithelioma.	1	....

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8. Andrews, G. C.: Precancerous and Cancerous Dermatoses of Skin, New York J. Med. 50: 1655, 1950.

9. Howell, J. B.: Cancer of Center Face, South. M. J. 43: 283-291, 1950.

10. Martin, P.: Effect on Eye of Radium Used for Treatment of Malignant Disease in Neighbourhood (Hunterian Lecture), Brit. M. J. 1: 651-654, 1937.

11. Peter, G.: X-Rays and Radium in Treatment of Tumors of Conjunctiva, Radiology 25: 745-749, 1935.

12. Hunt, H. B.: Cancer of Eyelid Treated by Radiation, with Consideration of Irradiation Cataract, Am. J. Roentgenol. 57: 160-180, 1947.

13. Kumer, L., and Sallmann, L.: Die Radiumbehandlung in der Augenheilkunde, Wien, Springer-Verlag, 1939.

which cataracts developed this might well have been avoided by using proper eye shields, directing the rays at angles that would avoid placing the lens in the direct target range, or by employing other methods in cases in which this could not be done. Roentgen therapy, when applied with proper shielding of the eyeball, carries definitely less hazard of irradiation cataract than does radium therapy since the eyeball and lens can be effectively protected against superficial roentgen rays and beta rays with a shield equivalent to 1 mm. of lead. No eye shield is adequate for protection against the more penetrating gamma rays. The ophthalmoscopic [12] appearance of early irradiation cataract presents rather typical features and may be identified as such, but, when these changes progress to total cataract of the lens, it then loses these characteristics.

COMMENT

Early diagnosis, together with prompt adequate therapy, is needed more in lesions of the eyelids than in any other field of cancer because a good cosmetic result, as well as a functional one, is of prime importance. Since most basal cell epitheliomas apparently arise on the skin surface near the lid margin and gradually spread to invade the canthi, mucocutaneous margin, and finally the deeper structures, it is obvious that the cure rate is highest the earlier the treatment is given. Except for those in 10 previously treated patients in my series (table 1), all were early lesions that should have been cured in one treatment. Since it is felt that eyelid lesions should be followed at least three years before cure is certain, 23 of the 36 lesions in this series are listed as apparent cures even though many of them had been observed over two years. Of the 36 lesions, 31 were apparently cured in one treatment. Of the 10 previously treated patients, 6 received one treatment, 2 required two treatments, and 2 (both having had many previous x-ray and other types of therapy) were given three or more treatments. The five cases of squamous cell epitheliomas were recognized early, received slightly more irradiation than the basal cell epitheliomas, and were all apparently cured in one treatment. Three had more than the required three year observation period and can be considered cured. As noted in other series, many of the patients presented basal cell epitheliomas or keratoses elsewhere than on the eyelids. Driver and Cole [14] report this in 47% of their cases, Sharp [15] in 33%, and Hunt [12] in 28%. Several of the group had cancers simultaneously on both lids. Progression from one inner canthus to the opposite one has been noted repeatedly by myself and others.

In a fair percentage of cases in the literature, the lesions were advanced cancers requiring enucleation for invasion of the orbit. Others must have been late squamous cell epitheliomas that had metastasized. None of the squamous cell epitheliomas of the face that I have seen [16] have had node involvement before four to six months, but others state that metastasis may occur early. There were no mixed or transitional epitheliomas in this series. Welton and co-workers [17] reported 97.1% five year cures in 1,052 patients with cutaneous cancer treated by use of curettage, electrothermic, and roentgen ray therapy. There seems to be every reason to believe that this method is the treatment of choice for cancer of the eyelids as well. Four previously irradiated lesions were treated satisfactorily by the chemocautery of Sherwell preceded by curettement. This method is not recommended, however, because it is almost impossible to protect surrounding tissues against the destructive effects of the chemical.

SUMMARY AND CONCLUSIONS

The various types of cutaneous malignancies found on and about the eyelids are enumerated and diagnostic features are outlined. In this series basal cell epitheliomas were by far the most frequent malignant lesions encountered, and at least four-fifths of these were seen along the lower eyelid especially about the inner canthus. Early diagnosis and prompt treatment are stressed as particularly essential because, about the eyelids, even the slightest invasion might find some vital tissue involved and thus might greatly complicate therapy.

The method of removing the bulk of the tumor by desiccation and curettement followed immediately by radiation is fully described as the procedure of choice for most cases. Treatment by various types of radiation alone is briefly discussed. Surgery appears to offer least in the treatment of these cases. Complications of therapy and ways to avoid them are discussed.

ADDENDUM

Since this paper was written, one patient who had received three previous treatments had a questionable recurrence at the lower end of the scar farthest from the lid margin. This patient had had an apparent one and one-half year cure up until she was seen this time. This I believe definitely points out that a three year cure rate is imperative in determining cure of cancer about the eyelids.

140 E. 54th St.

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14. Driver, J. R., and Cole, H. N.: Epithelioma of Eyelids and Canthi: Report of Series of 324 Cases, Am. J. Roentgenol. **41:** 616-624, 1939.
15. Sharp. G. S.: Treatment of Cancer of Eyelids, J. A. M. A. **111:** 1617-1622 (Oct. 29) 1938.
16. Traub, E. F., and Tolmach, J. A.: Squamous Cell Epitheliomata of Skin of Face: Report of 26 Cases, New York J. Med. **33:** 875-881, 1933.
17. Welton, D. G.; Elliott, J. A., and Kimmelstiel, P.: Epithelioma: Clinical and Histologic Data on 1,925 Lesions, Arch. Dermat. & Syph. **60:** 277-293 (Aug.) 1949.

Gallstones in Old People.—Gallstones are more common in both men and women in their old age than is usually realized. . . . It is hard to believe that any medical management of them is of any value. In the Peter Bent Brigham Hospital series, the hospital mortality of old people with gallstones was 34%, whereas the hospital mortality for all the patients was only 23.6%. There were 455 patients who knew that they had gallstones and were not operated upon; of these, 28 died wholly of causes produced by the stones and 53 others died of other diseases with contributions from the stones. This is a medical mortality rate of 17.8%, which far exceeds what should be expected from surgery. Gallstones seem to enhance cardiac manifestations in old patients who have heart disease, such as angina and auricular fibrillation. Gallstones and their management increase nervous indigestion. Cancer of the biliary system is not found without them. For all these reasons it is good practice to insist on cholecystectomy soon after the presence of gallstones has been established, and not to wait for complications.—R. T. Monroe, M.D., The Effect of Aging of Population on General Health Problems, *The New England Journal of Medicine,* Aug. 20, 1953.

CANCER OF FOREHEAD AND SCALP

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Cancer involves the scalp either as a primary disease, by metastasis, or by extension from an intracranial carcinoma. Primary scalp cancer is a more dangerous disease than is generally accepted, and the incidence of improper management is frequent. Metastasis to the scalp may be secondary to various types of malignant tumors in different portions of the body, especially if the primary tumor is highly malignant. Carcinomas that are known to metastasize to the scalp [1] on occasions are hypernephroma and carcinoma of the stomach, colon, breast, bronchus, thyroid, prostate, and bladder. Montgomery and Kierland [2] emphasized that metastases may be limited to the scalp and that a diagnosis of carcinoma of the internal organs may first be established by recognition of the cutaneous metastasis by means of a cutaneous biopsy.

Primary carcinoma of the forehead and scalp starts as a basal or a squamous cell lesion; it is of unknown etiology. The precancerous dermatoses are encountered much less often in cancer of the forehead and scalp than they are on the exposed surfaces of the body. As a rare happening cancer of the scalp may develop in scar tissue of long standing. The scar may have been caused by trauma, a thermal or chemical burn, lupus vulgaris, localized scleroderma, or tertiary syphilis. Long-standing roentgen dermatitis involving the scalp, forehead, or any region should always be considered precancerous and treated accordingly. Bowen's disease and senile, arsenical, and solar keratoses rarely occur on the scalp. If present, however, they are true precancerous lesions. Epithelial and sebaceous cysts may undergo malignant change. Malignant change may take place in developmental anomalies of the epidermis and/or the adnexal structures of the scalp. Junctional and compound nevi, which may give rise to malignant melanoma, and primary adenocarcinomas of sweat or sebaceous gland origin will not be considered in this paper.

The dermatologist is usually alert in detecting suspicious new growths over the forehead and scalp and loses no time in taking a suitable specimen of tissue for biopsy at the time of the initial examination in order to promptly confirm his clinical diagnosis.

ESTABLISHMENT OF POSITIVE DIAGNOSIS

The diagnosis of cutaneous cancer of the forehead and scalp, as anywhere on the skin's surface, is made on the basis of the results of microscopic examination of a suitable specimen of tissue that is clinically suspected of being malignant. In the large superficial epitheliomas of the scalp, more than one specimen may be required before the diagnosis can be established. The thread-like, slightly elevated, mother-of-pearl-colored border of the lesion is the site most suited for obtaining material for the biopsy. When the possibility of bone invasion by cancer exists, specimens of bone should be taken for study. Roentgen examination of bone is inadequate to differentiate the similar characteristics of osteomyelitis, roentgen necrosis, tumor invading bone, or combinations of these three.

Cancer of the scalp is a more serious disease than is generally considered. Case histories of patients who have cancer of the scalp reveal a tendency for the patient to procrastinate and to delay seeking medical aid longer than he would in a case of similar lesions on the face. Unfortunately, physicians are to blame for allowing many simple, small cancers of the scalp to grow, infiltrate, and become a major treatment problem. Our failure is, first, in having too little suspicion of cancer of the scalp. The physician who makes the initial examination too frequently fails to establish a positive diagnosis by taking a suitable specimen of tissue for biopsy. Second, the incidence of poor management by the physician in scalp carcinoma is greater than that for other regions of the head and neck. Mismanagement of scalp cancer is serious and may add to the patient's disability and the cost of getting well or may indeed lead to his death. We must and can remedy our failure for the delay in establishing a microscopic diagnosis promptly.

CLINICAL FEATURES AND PATHOLOGICAL CHANGES

The clinical features and pathological characteristics of primary carcinoma of the forehead and scalp are essentially the same as those of carcinoma in other portions of the head and neck with few exceptions. Emphasis should be given only to the frequent occurrence on the scalp of basal cell carcinomas of multicentric origin. These lesions grow and involve sizable portions of the scalp's surface. Their most characteristic feature is their thread-like, mother-of-pearl-colored border. The edges of such a lesion may be flat or slightly elevated and rolled. The surface of the lesion may be essentially normal in its appearance or slightly hyperkeratotic and scaly, crusted, moist, erythematous, atrophic, ulcerated; combinations of these features may be present. The hair is usually present in patches and is not destroyed completely by the tumor. Clinically, cancer of the scalp may be mistaken for psoriasis, lupus erythematosus, seborrheic dermatitis, scar, or pyoderma in the moist type of lesion. Small nodular epitheliomas of the scalp may resemble the common mole. Morphea-like epitheliomas have been observed on the forehead and scalp on at least three occasions. Pig-

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Drs. W. B. Weary, Charles Martin, R. S. Clayton, and James T. Mills helped in the studies reported and in the preparation of the manuscript.

Read in the Symposium on Cutaneous Malignancy, an Appropriate Segment of Dermatology, before the Section on Dermatology and Syphilology at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

[1] Figi, F. A.: Malignant Tumors of Scalp, S. Clin. North America **26**: 859-870, 1946. Symmers, D.: Metastasis of Tumors: Study of 298 Cases of Malignant Growth Exhibited Among 5,155 Autopsies at Bellevue Hospital, Am. J. M. Sc. **154**: 225-240, 191 [illegible] Metastasis of the Scalp Simulating Turban Tumors, Arch. Dermat. & Syph. **41**: 639-648 (April) 1940.

[2] Montgomery, H., and Kierland, R. R.: Metastasis of Carcinoma to Scalp, Arch. Surg. **40**: 672-684 (April) 1940.

mented basal cell carcinomas of the scalp are rare. Mistaking a malignant melanoma for a carcinoma of the scalp is a serious error that is made too frequently.

ROUTES OF SPREAD[3]

The spread of cancer of the scalp is dependent on many factors, many of which are unknown, variable, and unpredictable. These factors include the type of cells making up the neoplasm, the area in which invasion can occur, the amount of connective tissue response called forth by the invading epithelioma, the direction of the growth, the type of tissue near the new growth, the blood supply or nutritional state of the tissue, the effects of previous therapy, and the patient's age and his general health. Most basal cell cancers grow relatively slowly on the scalp but are invasive and destructive. They reach huge dimensions and may produce a prolonged and serious illness with disfigurement, pain, crippling disability, and even death.

Cancer of the scalp, forehead, and temple has a strong tendency to invade the dermis. This is strikingly exhibited in the older and/or more advanced carcinomas. It occurs, however, in some early lesions. Peripheral and downward infiltration in the dermis is usually not uniform. Invasion may progress several times more rapidly on one side of the lesion than on the other sides. This uneven and ameboid invasion makes it difficult to determine clinically the border between normal and cancer tissue. The larger the lesion, the wider should be the peripheral zone allotted for treatment beyond the visible and palpable extent of the carcinoma.

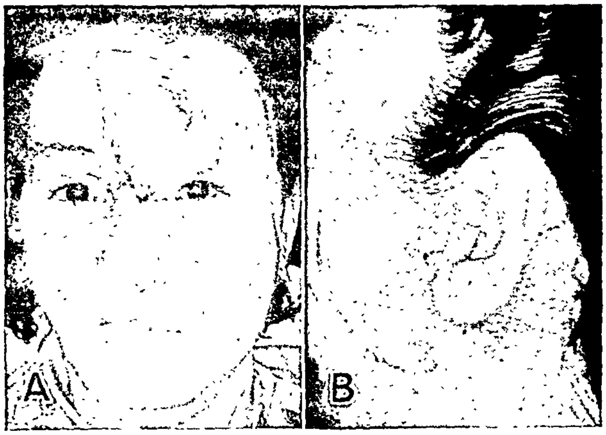

Fig. 1.—Spread of basal cell cancer through the inner table of the skull includes, *A*, persistent, proliferating cancer involving the soft tissues and bone. Tumor recurred despite x-ray therapy followed by a craniotomy and removal of a 5 by 6 cm. bone flap, and *B*, carcinoma had extended from forehead, invaded the outer table of the frontal bone, and then spread by way of the inner table to the squamous portion of temporal bone. Penetration to the outside involved the region of the ear.

In cutaneous cancer, there is a strong possibility of peripheral spread in or on the surface of the scalp's fascia. The resistance to spread is apparently less in the fascia than it is in the underlying tissue; thus the lesion is allowed to spread widely and sometimes rather rapidly over the top of the cranium. Primary carcinoma of the temporal region may invade the temporalis fascia and spread peripherally and often downward extending beneath the zygomatic arch to the tendinous insertion on the mandible —all without invasion of the underlying temporalis muscle.

The periosteum offers a temporary restraining effect to bone invasion by carcinoma of the scalp, perhaps because of the greater ease of peripheral travel in this tissue as compared with that in bone. It is difficult and, on occasions, impossible to detect early invasion of carcinoma in the periosteum, except by biopsy.

Some epitheliomas spread along the nerve sheaths of one or more nerves. On rare occasions carcinoma of the scalp spreads by permeation of the small vessels of a lymphatic plexus, or it may follow one or more larger lymphatic vessels or plexuses. Permeation by continuity through lymphatic vessels may be observed in either basal or squamous cell epitheliomas. Squamous cell carcinoma may exhibit peripheral embolic spread. The prognosis of patients with a discontinuous, embolic type of spread of carcinoma is adverse.

Dr. N. A. Thorne presented a case for Dr. W. J. O'Donovan at the Tenth International Congress of Dermatology in London in 1952. The lesion was diagnosed as being carcinoma erysipelatodes secondary to squamous cell carcinoma arising in a wen. The patient in the case presented was a white man 81 years old. In 1932, a swelling developed on the right anterior portion of the scalp, slowly increased in size, discharged on several occasions, and, in 1950, was lanced. In June, 1951, the patient noticed a pink discoloration on his forehead; this spread to his face. Examination revealed ulceration of the wen because of squamous cell carcinoma. The patient's face was covered with telangiectases and a circinate raised erythematous infiltration caused by carcinoma cells in the lymphatics of the dermis. Metastases were present in the cervical lymph nodes. The lymphatic invasion over the forehead and face produced an inflammatory erysipeloid eruption comparable to the inflammatory cutaneous lymphatic metastasis of the chest wall and arm in carcinoma of the breast (carcinoma en cuirasse).

Both basal and squamous cell cancer spread by invasion along the adventitia of arteries and veins and by permeation through the lumens of blood vessels. Adventitial extensions may continue beyond the main mass of the cancer. The tendency for cutaneous cancer to spread in the lumen of the blood vessels is rare. Mohs and Lathrop[4] reported two cases, one of squamous cell cancer with cerebral metastasis and one of the basal cell type in which the veins in the region of the nasolabial fold were permeated and in which, in the deeper portion of the neoplasm, the downward growths were exclusively intravascular. There was no evidence of metastasis after four years.

Permeation of bone by cancer of the scalp is not rare. After invading the periosteum, the progress of the infiltration is in the outer table of the calvarium. The spread may continue both downward and peripherally through the spongy diploë. Such an occurrence should be considered a serious matter. The chances for cure are reduced appreciably when the bone becomes invaded. The neoplasm usually spreads widely over the top of the cranium before penetrating the bone. The coronal and other sutures may offer a path of less resistance for intracranial penetration. Expansion through the spongy bone of the inner table may be widespread. The inner table may be a path of least resistance in a few cases of cancer of the scalp involving bone. The following case is an illustration of this mode of spread.

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[3] Most of the remarks on routes of spread are based on Mohs and Lathrop: Modes of Spread of Cancer of Skin, A. M. A. Arch. Dermat. & Syph. 66: 427-439 (Oct.) 1952.

[4] Mohs and Lathrop.[3]

A 44-year-old white woman complained of an ulcer of the forehead. She noticed a small nodule 17 years ago. It grew very slowly and eventually ulcerated; the forehead and eyebrow region on the left were involved. Three years earlier the lesion had been treated with x-ray therapy of unknown quality and quantity. This had given temporary relief, but the lesion had soon recurred. The woman lost 30 lb. (13.6 kg.) in six months, and when first seen she had a contraction of the left upper lid from the lesion above it (fig. 1*A*). Physical examination revealed a flat ulcerated lesion of the left side of the forehead. It was 5 by 6 cm. in diameter, and in the middle there was a deeper ulcer. There was also destruction of the outer table of the skull. Results of serologic tests for syphilis were normal.

From June 26 to July 10, 1947, the patient received x-ray therapy daily except on Sundays. The dose was 300 r in air, with 200 kv. and 0.5 mm. Cu and 1 mm. Al filter to a portal 7 cm. in diameter on the left side of the forehead with a focal distance of 50 cm. (3,600 r total dose). In three months there was no clinical evidence of carcinoma in the ulcer. Because of necrosis of a portion of the denuded bone and accompanying pain, the patient was referred for the removal of the diseased bone. In October, 1947, examination showed a 3 by 8 cm. ovoid lesion on the left frontal area with a zone of hyperemia. Exposed spongy bone was seen at the base of the lesion. Films of the skull showed bony destruction of the left frontal region measuring 3 by 4 cm. This destruction was 3 cm. above the left orbit in about the midportion of the left frontal bone. Several small sequestrums were visualized. The impression gathered clinically and from the films of the bone was that there was osteomyelitis of the left frontal bone involving an area of 3 by 4 cm. A bone biopsy was not done. At operation, bur holes were made in the upper portion of the necrotic bone, and these were enlarged with a heavy rongeur. The sclerotic bone was found to extend 1 cm. beyond the margin of the skin defect. This was all removed leaving a defect 5 by 6 cm. This defect was later closed with a pedicle flap.

For several years there was an apparent cure. Recurrences became evident by February, 1952. On examination a healed skin graft 6 by 8 cm. covering the left side of the forehead was noted. A 2 by 4 cm. ulcer was present in the portion of the graft near the midline and above the left orbit. There was elevation and induration about the ulcer. Coming up from below, without a preceding surface lesion, was a preauricular elevation and induration. Draining, ulcerating areas were noted in the canal and in the preauricular and postauricular folds. The appearance of the left ear was that of a second primary carcinoma of skin of the base of the ear (fig. 1*B*). The skin and subcutaneous tissue between the graft and the preauricular area 5 cm. away were normal clinically. There was a left facial paralysis and horizontal nystagmus.

X-ray examination of the skull showed a craniotomy of the left frontal bone measuring 4 by 7 cm. (fig. 2*A*). The posterior edge of the defect coincided almost exactly with the left coronal suture. The anterior and medial aspects of this defect exhibited a destructive process of the bone that extended practically to the midline and vertically above the rim of the orbit for a distance of 4 cm. There was also evidence of destruction at the superior and along the anterior portions of this craniotomy defect. There was also extensive destruction of the left temporal bone measuring approximately 4 by 5 cm. The bone appeared to be completely destroyed in this area. There were other small destructive lesions in the anterior fossa of the skull on the left side (fig. 2*B*).

From March 1 to March 25, 1952, x-ray therapy was given to a portal 10 cm. in diameter centered over the left ear. A second portal centered over the forehead measured 12 by 10 by 9 by 4 cm. One hundred fifty roentgens in air was given to each portal daily until 3,000 r in air had been given. The factors were 220 kv., with 0.5 mm. Cu and 1 mm. Al filter and 50 cm. skin target distance. Three months later the patient experienced an attack of sudden headache, chewing of the tongue, irregular breathing, purple lips, and all the symptoms of an epileptic attack. When the attack ended the patient was in a state of weakness, exhaustion, and disorientation.

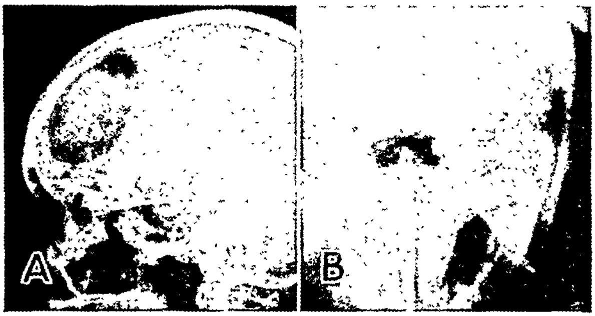

Fig. 2.—*A*, lateral radiograph of skull showing craniotomy defect in the frontal region. A destructive lesion is seen in the anterior inferior margin of this defect involving the full thickness of the skull. Note large area of destruction in squamous portion of temporal bone extending from above and behind external auditory canal forward to a point near the junction of sphenoid wing with lateral margin of the calvarium. *B*, submentovertex projection of the same skull showing an extensive destructive process involving the lateral half of the floor of the middle fossa of the skull (arrows). This defect is continuous with the destructive lesion shown in *A*.

Radiographs made in September, 1952, showed the extension of the malignant process into the tables of skull surrounding the defect in the frontoparietal region and posteriorly in the right occipital region. X-ray evidence indicated that a tumor probably surrounded the internal auditory canal and involved the innermost portion of the petrous ridge of the temporal bone. It extended forward to affect the spongy portion of the temporal bone and irregularly to the midline in front to involve the frontal bone. The meninges and brain were invaded as a direct extension and infiltration from cancer of the bones of the skull. The spinal fluid rarely acts as a means of spread for the tumor cells in basal or squamous cell cancer from the scalp. The following case illustrates the continuous invasive and destructive traits of cancer of the scalp.

This 69-year-old white man was seen at the Tumor Clinic, Parkland Hospital of Dallas. When he was 30, a "mole" was noted on the occipital portion of the scalp. The lesion was said to ulcerate and to become infected frequently. There was a gradual enlargement of the lesion over a period of many years. When the man was 66, the lesion was treated by electrocoagulation, and almost complete healing followed. Caustic plasters were applied at intervals for one to two years to the lesion. It had grown at this time to approximately 3 cm. The first hospital admission was in May, 1947, at the Tumor Clinic of Parkland Hospital.

On physical examination the right occipital region of the scalp was found to be the seat of an ulcer that measured 8 by 10 cm. The underlying spongy bone was exposed and appeared darkened and necrotic. The lesion had an elevated, indurated border. The regional cervical lymph nodes were palpable. A roentgenogram was reported to show destruction of the right occipital bone from direct extension of neoplasm. A biopsy report on a portion of the ulcer did not indicate carcinoma. Tissue removed at subsequent operations was found to contain basal cell carcinoma. The last two specimens examined were reported to be high grade squamous cell carcinoma. The pathologist reported that the cervical lymph nodes did not contain carcinoma. Serologic tests for syphilis were normal.

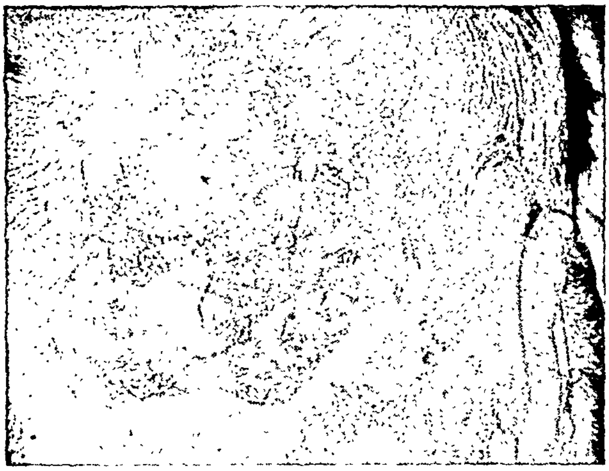

Fig. 3.—Primary basal cell carcinoma with recent transition to high grade squamous cell cancer. Tumor penetrated to the dura in the customary way by infiltration and direct extension of the underlying tissues over a period of years.

Two débridement procedures for osteomyelitis of the skull were done in 1947. With the patient under general anesthesia, the outer table of the skull underlying the ulcer was found to be completely necrotic. The defect measured 6 cm. in diameter. There was relatively clean granulation tissue under the necrotic table. The outer table was removed except for a 15 mm. area that was adherent and could not be removed. A split thickness graft from the anterior left thigh was placed over the granulating area. Eight additional operations for removal of necrotic bone and the application of a skin graft were carried out during 1947, 1949, 1950, 1951, and 1952 for what was considered osteomyelitis of the bone. The diseased bone was not examined by the pathologist.

Low intensity radium needles were implanted for seven days along the margins of the ulcer in an effort to destroy recurrent small areas of carcinoma. Three thousand roentgens low voltage unfiltered x-ray therapy was given in 10 days to a 6 by 4 cm. field in 1951 and to a 4 cm. field in 1952; 4,000 r were given to a 3 by 1.8 cm. field and to a 4.3 by 7.5 cm. area. Despite these measures the growth has continued in the bone, has now invaded the dura (proved by biopsy), and has produced a defect illustrated in figure 3.

COMPLICATIONS OF IRRADIATION

Atrophy.—Atrophy of the soft tissues of the scalp may develop, with diminished blood supply to the areas. This may lead to diminished resistance to trauma and/or infection or failure of the area to heal after irradiation.

Bone Infection and Necrosis.—Ewing [5] has pointed out that the blood supply of bone is peculiarly susceptible to strangulation by irradiation. That such changes render membranous bone unusually fertile soil for bacterial invasion and necrosis has been amply demonstrated.[6] Cancercidal doses of radiation may produce enough destruction of the normal immunological barriers to allow the spread of infection from the cranium by retrograde thrombophlebitis.[7]

Susceptibility to Damage.—The tissues of the brain are more susceptible to irradiation damage than has generally been accepted. Convulsions after roentgen therapy occurred in one of our patients. A similar occurrence took place in a patient observed by Driver.[8] The patient received approximately 10,000 r low voltage x-ray therapy to a basal cell cancer measuring 9 by 7.5 cm. on the crown of the scalp. Reflex changes, cerebral hypoplasia, vascular changes, and glial degeneration have been attributed to irradiation.

Commenting on the effects of irradiation on the brain, Dyke [7] described a patient who had received 80 to 90 threshold erythema dose over a period of years. Blindness, convulsive attacks, and also a large ulcer in the scalp and necrosis of the occipital bone subsequently developed. When this patient came to autopsy, approximately four years after the last roentgen treatment was given, the medulla and occipital and parietal lobes of the brain showed hemorrhagic necrosis. Within the areas of necrosis there were decreased reactions of the interstitial tissue, and a deposit of homogenous substances was noted that corresponded to Alzheimer's "colloid degeneration." Dyke stressed that the harmful effects of irradiation on the brain may become manifest 5 to 15 years after treatment and may prove fatal. A number of monkeys that were given irradiation did not show any immediate effect, but later on evidence of degenerative changes in the brain did develop.

Blood Vessel Damage.—Blood vessel damage may lead to necrosis of the tissues supplied by the vessels.

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5. Ewing, J.: Radiation Osteitis. Acta radiol. **6:** 399-412, 1926.

6. Desjardins, A. U.: Osteogenic Tumor: Growth Injury of Bone and Muscular Atrophy Following Therapeutic Irradiation, Radiology **14:** 296-308, 1930. Ewing.[5]

7. Dyke, C. G.; in discussion on Pendergrass, E. P.; Hodes, P. J., and Groff, R. A.: Intracranial Complications Following Irradiation for Carcinoma of Scalp, Am. J Roentgenol. **43:** 214-225, 1940.

8. Driver, J. R.: Personal communication to the authors.

Osteomyelitis.—Osteomyelitis may develop as a result of irradiation of carcinoma of the scalp.

Intracranial Infections.—The following sobering report on intracranial infections is worthy of summary. Pendergrass, Hodes, and Groff[7] reported fatal intracranial complications in three patients who received large doses of radiation for carcinoma of the scalp. The first was a white man, 60 years old, who complained of an ulcer of 11 years' duration. The lesion measured 13 cm. in diameter and was situated over the right frontal bone. The bone in the center of the involved area was denuded. The edges were raised with considerable infiltration evident in the outer canthus and upper lid of the right eye. No metastatic nodes were palpable in the cervical region. The biopsy showed spinocellular carcinoma, grade 2. The serologic examination was normal. On roentgen examination, there was a demineralized area in the frontal bone on the right side caused either by infection or malignant disease, or both. The patient had received an unknown amount of low voltage x-rays for the lesion five years and again two years prior to admission to the hospital. At irregular intervals one year before being seen by Pendergrass, Hodes, and Groff the lesion had been treated with high voltage radiation (200 kv. and 50 cm. skin target distance) receiving a total of 5,000 r filtered through 0.50 to 0.75 mm. of copper.

On admission the treatment was outlined as follows: The entire lesion was divided into six fields, each 7 cm. in diameter. One portal was treated daily, 350 r being delivered at each sitting. The factors were 200 kv. with 15 ma. and a skin target distance of 18 cm. A thoraeus filter equivalent to 5 mm. Cu (1.25 mm. Sn, 0.25 Cu, and 1 mm. Al) was employed. The patient received 2,000 r to each of the six portals in 55 days. Two weeks after the last treatment a biopsy revealed evidence of malignant activity. After consultation with another radiologist, the lesion was given an additional 2,000 r to each of two portals in six days. Evidence of an intracranial lesion developed six weeks after the last treatment. A dural and subdural infection were found and drained. The patient ultimately succumbed to the intracranial infection. A diffuse, purulent meningoencephalitis was found at autopsy. A culture of the material obtained from the cavity in the brain showed both Micrococcus (Staphylococcus) albus and Streptococcus hemolyticus.

Their second patient, a 53-year-old man, was admitted on March 27, 1937, with an ulcer of the scalp of nine months' duration, 10 cm. in diameter, and overlying the left parietal bone. Serologic examination was normal, and roentgen examination of the bones of the vault showed nothing abnormal. The biopsy report on the lesion was squamous cell carcinoma. The lesion was divided into three fields, each 9 cm. in diameter. Four hundred roentgens was delivered through one portal per day until the patient had received 2,100 r in 16 days. The factors were the same as in the first patient. The lesion regressed rapidly. Several metastatic cervical nodes were also given x-ray therapy and subsequently excised; they contained carcinoma cells. Bur holes were drilled in the calvarium to hasten granulation tissue proliferation. Eight weeks after the last treatment, signs of an intracranial infection developed. A subdural abscess from which a culture revealed micrococci was drained, but the patient died. At autopsy a large abscess was found in the brain. Even more unusual was a sizable metastatic nodule in the contralateral temporal lobe. The metastatic focus in the brain merits special comment as similar metastases in patients with carcinoma of the scalp have not been observed. Death in this patient was due to an obliterative endarteritis and brain softening.

The third patient described by Pendergrass, Hodes, and Groff was a 47-year-old man who was admitted on April 12, 1930. Examination revealed an ulcer of the scalp of nine years' duration. The lesion overlying the parieto-occipital region was 4 cm. in diameter. The bone was not exposed, serologic examination was normal, and a biopsy indicated a basal cell carcinoma. The lesion received 2,750 mg. hours of radium in 18 months. Later a recurrence was removed surgically leaving denuded bone. The bone was subsequently spotted with bur holes to promote granulation tissue proliferation. Another recurrence developed; this received 15,800 r of low voltage radiation in five months. The patient received 5,000 r of unfiltered radiation and 2,600 r filtered through 0.25 mm. Cu in four days (physical factors, 135 kv., 5 ma., skin distance 30 cm., field 9 cm., and filtration 0.25 mm. Cu and 1 mm. Al). Six months later another biopsy showed carcinoma, and an additional 7,000 r of unfiltered radiation and 1,200 r with 1 mm. Al were delivered to the lesion in two days. Osteomyelitis of the calvarium developed and progressed until a large portion of dura became exposed. The dura and brain subsequently degenerated. A diffuse, micrococcic meningitis caused death. Autopsy was not performed.

Dr. Cornelius G. Dyke of New York City, in the discussion of the paper by Pendergrass, Hodes, and Groff, pointed out that it was extremely difficult to be certain that the irradiation was instrumental or causative in producing death in these patients by an infectious process. He reported having seen several patients in whom, during the roentgen treatment of a glioma, an epidural abscess developed several weeks or months after the operation. Thirty-one patients were treated in the operating room with 2,000 to 3,000 r 200 kv. (peak) delivered at one sitting by Dr. Dyke. Five of these 31 died of infections. In addition, a number of monkeys were given fairly large doses of roentgen rays, and in 3 out of 10 monkeys infections developed, and the animals died of meningitis or cerebral abscess. His feeling was that radiation in large doses apparently does interfere with the normal protective processes in the body and that some patients so treated are probably a bit more susceptible to infection[9] and more liable to succumb thereto than if not treated in this manner.

TREATMENT

Treatment in General.—The treatment of a patient in whom a diagnosis of cancer of the forehead or scalp has been proved must be individualized. The patient's age, the age of the growth, the rate and the direction of spread of the growth, and previous treatment must be considered. One must also evaluate the lesion's size, location, and attachments, the extent of invasion, whether bone, dura, or brain substance have been involved, and the possibility that metastasis to the regional lymph nodes has occurred.[10] The smaller the lesion, the better the prognosis and also the better the results of all modes of treatment. This remark certainly holds true for cancer of the scalp and forehead. Lesions that are less than 2 cm. in diameter usually are early lesions, do not invade bone, and are, therefore, curable with low voltage x-ray therapy by the interstitial implantation of low intensity radium needles, by excision and closure of the defect, by electrocoagulation (Sherwell technique), by cutting current excision, or by chemosurgery. The tumor should be completely eradicated by any one of these methods if the physician directing therapy is expert in the application of the method selected.

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[9] Elsberg, C. A.; Davidoff, L. M., and Dyke, C. G.: Roentgen Treatment of Tumors of Brain in Operating Room by Direct Radiation Through Open Wound, Bull. Neurol. Inst., New York 6: 19-32, 1937.

Wide publicity should be given to the fact that cancer of the scalp should be considered a more dangerous and a more difficult neoplasm to cure than is generally accepted. Wider and deeper coverage of the area calculated to be the extent and depth of the lesion is advocated. The treatment of patients with cancers of the forehead and scalp that exceed 2 cm. in diameter is arbitrarily divided into four groups for the purpose of discussion.

Group 1.—This group includes lesions involving the scalp and subcutaneous tissues but not the periosteum. The larger the lesion, even in carcinoma that has infiltrated only the superficial tissues, the stronger is the indication for a surgical approach.[11] Weary [12] recommends total excision of the large cancerous growths and primary closure of the defect if possible. In discussing his experience with large wounds of the scalp in World War II, he pointed out that many sizable defects of the scalp could be remedied by primary closure. By taking advantage of the scalp's good blood supply and excellent mobility, closure of the defect was possible by employing an elongated S-incision or a sliding H-closure or by using a semicircular sliding graft. Primary closure is usually preferable to skin grafting. The method of repair is dependent on the size and nature of the defect. When grafts are indicated, the order of preference is first for a full thickness, sliding or rotating scalp flap, second for a split thickness skin graft, and third for a full thickness free skin graft.

When an area of scalp exceeding 5 cm. in diameter receives a cancerocidal dose of irradiation, there is an increased susceptibility of the damaged vessels to obliterative changes and occlusion, with the passing of time, resulting in degeneration of the tissues supplied. The possibility of damage to the underlying bone by x-ray and radium therapy for large lesions has already been stressed. X-ray therapy of 140 to 200 kv. quality has been advocated by persons with excellent training in radiation therapy. The question "Does high voltage x-ray therapy have a place in the treatment of cancer of the scalp or is it contraindicated?" needs careful study and appraisal. Low voltage (80 to 100 kv.) x-ray therapy may be used successfully in cancer of the forehead and scalp. A wise therapist will fractionate treatment, will give small doses over a 10 to 21 day period, and will employ x-ray therapy for lesions that do not exceed about 3 or 4 cm. in diameter. Five hundred roentgens given every second day for 9 or 10 treatments (a total of 4,500 to 5,000 r) or 700 r given every second day for 6 or 7 treatments (a total of 4,200 to 4,900 r) is suggested.

When irradiation is contemplated for cancer of the forehead and scalp, the use of low intensity radium needles interstitially has many advantages.[13] A superficial basal cell cancer measuring over 8 cm. in greatest diameter and involving the forehead was treated successfully with low intensity needles and has remained well without sequelae for approximately five years. The patient was treated on an outpatient basis by Dr. J. E. Miller who was then on the Parkland Hospital Tumor Clinic staff. Only one-half of the lesion was treated at a time. After three or four months, the second half was treated; thus a high dose of irradiation in the center of the lesion was avoided. A dose exceeding 12,000 to 14,000 gamma roentgens is thought to be incompatible with viability of the tissues. The use of this method of splitting the area for treatment in large lesions of the scalp may be practical on occasions. The next two case histories also exemplify the usefulness of radium needles.

An 83-year-old white woman sought aid on Oct. 27, 1947, because of a "sore" on the scalp that had been present for five years or more. The lesion had been growing more active during the past 10 months. The patient had taken potassium arsenite (Fowler's) solution for a short period of time many years earlier. No treatment had been given to the lesion. Microscopic study following biopsy showed basal cell cancer. The lesion involved the left parietal area and measured approximately 5 by 5.5 cm. It was irregular in outline. A portion of the lesion was elevated; it resembled granulation tissue. The scalp was freely movable and not adherent or fixed to the bone.

On Oct. 27, 1947, with the patient under procaine anesthesia, low intensity radium needles were implanted in a prearranged pattern to cover the area completely, except for a small superficial projecting portion 1.5 by 1.5 cm. This projection from the main growth was destroyed by electrocoagulation. Eight needles, each containing 2 mg. of radium, and two needles, each containing 1 mg. of radium, were used for the implantation and were left in place for seven days. Healing required two and one-half months. The treated site remained well and asymptomatic for four years until the patient's death from other causes on Aug. 13, 1951, at the age of 87.

A 69-year-old white woman was examined on July 26, 1950, for a "sore" on the frontal portion of the scalp of approximately five years' duration. A specimen for biopsy was taken and the report was basal cell cancer. The lesion measured 2 by 2 cm. and was freely movable. A surface crust covered the shallow rodent ulcer. On Aug. 8, four low intensity radium needles, each containing 2 mg. of radium, were implanted. Three of the needles were implanted 1 cm. apart to cover the base of the lesion, and the fourth needle was placed perpendicularly to the ends of these three needles. The needles were sutured in place and allowed to remain for seven days. Healing required two months. The cancer was destroyed by this treatment, and the treated area has remained well for approximately three years.

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[10] Michelson, H. E.: Cutaneous Cancer, J. A. M. A. 136:683-686 (March 6) 1948.

[11] James, A. G.; Anderson, R. G.; Scholl, J. A., and Martin, B. C.: Cancer of the Scalp, Am. J. Surg. 80:441-445 (Oct.) 1950. New, G. B.; Figi, F. A., and Havens, F. Z.: Replacement of Tissues of Forehead and Scalp, S. Clin. North America 14:607-613, 1934.

[12] Weary, W. B.: Personal communication to the authors.

[13] Martin, C. L.: The Layer Technic in Radium Needle Therapy, Am. J. Roentgenol. 48:377-383, 1942; Low Intensity Radium Element Needles: Janeway Lecture, 1949, ibid. 62:467-492, 1949. Howell, J. B.: Cancer of the Center Face, South. M. J. 43:283-291, 1950.

In our experience the most satisfactory results in the management of large lesions in group 1 have been by surgery. The following brief case history illustrates the good results from this method. A 54-year-old woman was seen first in 1938 at the Tumor Clinic of Baylor Hospital. At that time she complained of a sore on her forehead of some 20 years' duration. On examination of the forehead, there was noted a circular lesion 4 cm. in diameter to the right of the midline of the forehead. The upper portion was covered with a crust and extended into the hair. The lower portion was red, and the covering epithelium was atrophic. X-ray examination of the skull on Oct. 6, 1938, revealed no evidence of involvement of the bone by carcinoma. Approximately 15 years earlier x-ray therapy had been given to the lesion on the right side of the forehead for cancer. After the x-ray therapy, there was improvement or complete regression of the central part of the growth. Some seven to eight years later the lower edge of the originally treated tumor had expanded and affected the forehead above the right eyebrow. X-ray therapy of unknown amount and quality was used to treat this lesion, and the patient did not return to the Tumor Clinic until 1946. At this visit a large crusted and scaly area involving the right scalp was seen. Several specimens of tissue for biopsy were taken before the diagnosis of basal cell carcinoma of multicentric origin was made. The Tumor Clinic panel, in evaluating treatment for this case, advised excision of the defect with closure by a skin graft. It was felt that the periosteum and bone had not been invaded. On July 21, 1947, with the patient under general anesthesia, the lesion was surgically excised. It measured approximately 10 by 14 cm. The excision was carried down to the galea. A split thickness graft approximately 1/15,000 of an inch thick was used to cover the defect. Healing was very satisfactory, and the graft took almost completely. There hs been no indication of a recurrence or persistence of the carcinoma during the past six years.

Dr. Clark Finnerud [14] has described a case very similar to the one just mentioned. The lesion, which measured 8 cm., was an extensive basal cell carcinoma of the superficial type involving the forehead and scalp but not invading the bone. The patient was referred for excision and the defect covered with an appropriate graft. The patient has remained well to date.

Group 2.—This group includes lesions involving scalp, subcutaneous tissue, and periosteum but not involving bone. The treatment is primarily surgical. Irradiation is not advocated. Mohs has demonstrated the usefulness of chemosurgery for lesions in this group.

Weary [12] stresses the importance and advantages of complete excision of the neoplasm followed by primary closure of the scalp defect. He emphasizes that undermining the normal scalp allows the wound to be closed, even when the defect at first may appear too large for primary closure. The elongated S-incision, the sliding H-closure, or the semicircular sliding graft has been found to be of special service. Whenever grafts are required, a full thickness or pedicled graft is preferable for the forehead and nuchal area, and for the scalp a full thickness pedicled scalp flap is best.

Attention is directed to the importance of microscopic examination of bone by a competent, understanding pathologist in cases in which bone invasion by the cancer needs to be confirmed or denied. Multiple specimens of bone are required on occasions. Where there is doubt that the process is osteomyelitis, more than a single examination may be needed before planning a radical operation for removal of an area of devitalized bone or an area of osteomyelitis. It is of the utmost importance to stress again the inadequacy of x-ray examination of the skull in differentiating radiation necrosis, osteomyelitis, and invasion of bone by cancer.

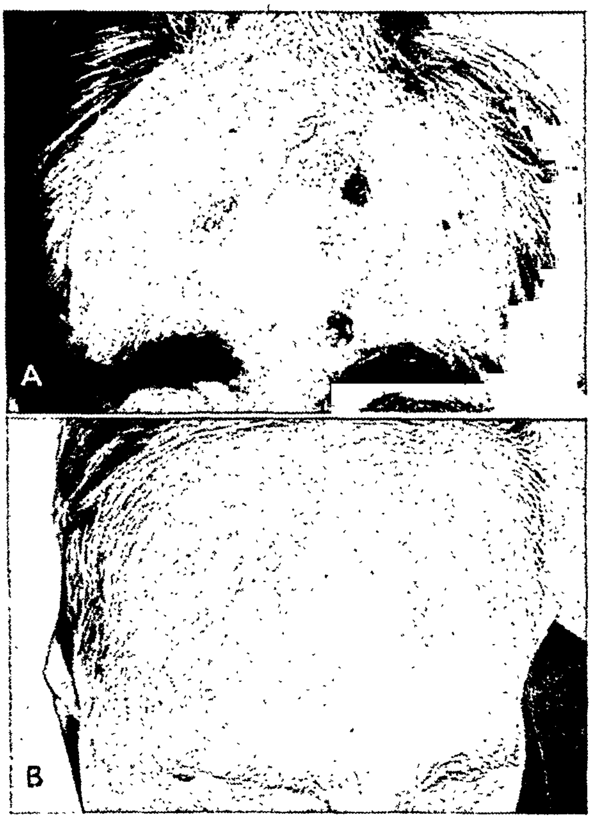

Fig. 4.—Superficial Epitheliomatosis: In basal cell epithelioma of multicentric origin, *A*, lesion has been present 16 years, measures 10 by 14 cm., and in one small area near the midline has invaded periosteum, and, *B*, three years after excision of the tumor and repair of the defect with a split thickness skin graft.

The following case histories are illustrative. A 69-year-old man was seen at Parkland Hospital Tumor Clinic on April 15, 1945, because of a crusted, ulcerating growth on the forehead and scalp (fig. 4). The lesion measured approximately 10 by 14 cm. and had been present since 1934. It was first noted when the patient accidentally skinned his forehead while plowing. A serologic test for syphilis was normal, and microscopic study after biopsy showed basal cell carcinoma. The scalp was freely movable everywhere.

On an experimental basis, the upper half of the lesion was treated by daily application of a 20% concentration of podophyllum resin (podophyllin) in alcohol for two weeks. Pain resulted from the paintings. After a rest period of two or three weeks, the lower portion of the growth was treated by the daily application of 20% podophyllum resin in alcohol. After only four or five daily applications, conjunctivitis with a corneal ulcer involving the left eye occurred. After the development of the corneal ulcer, this method of treatment was abandoned. The conjunctivitis and corneal ulcer healed without sequelae, but the carcinoma was not favorably influenced.

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[14] Finnerud, Clark W.: Personal communication to the authors.

On Feb. 17, 1950, with the patient under general anesthesia, the large lesion was excised down to the periosteum. A split thickness graft was used to cover the defect. The skin graft was 1/15,000 of an inch thick and was taken from the right thigh. The grafting was successful. On Aug. 13, 1950, a 1 by 1.5 cm. hard nodule was detected on the left side of the forehead. This was suspected of being a persistent tumor. On Sept. 18 with the patient under local anesthesia, this lesion was excised widely and down through the periosteum. A small portion of the outer table of the frontal bone was chiseled away. The defect was closed by a split thickness graft. The tissue report was basal cell carcinoma in the scalp. The bone was not examined. The forehead has been inspected regularly and has remained well for three years.

A 55-year-old white man was examined on April 4, 1950, because of an ulcer of the left side of the forehead. The lesion had been present eight or more years. It had been treated with x-ray therapy of unknown amount and quality by a general practitioner four years earlier. Three years ago the lesion had been treated by electrocoagulation, but it had persisted. On examination, the right side of the forehead was noted to be involved by a morphea-type basal cell carcinoma measuring approximately 6 by 5.5 cm. A portion of this plaque-like lesion was ulcerated. The lesion was fixed to the underlying bone and was not movable in the areas overlying the ulcers. Consultation with a plastic surgeon was arranged. He advised a wide excision of the cancer, namely the right half of the forehead, with the excision being carried down to the outer table and the soft tissues being removed subperiosteally. The defect was to be covered later by a skin graft.

This lesion, including a generous margin of tissue on all sides, was excised on April 7, 1950. Five sections of the outer table of the skull were taken for microscopic examination to determine whether invasion of bone had occurred. Cancer could not be found in the bone specimens. Granulation tissue sufficient to support a split thickness graft failed to fill the wound during the five months after excision of the cancer. On Sept. 22, 1950, with the patient under general anesthesia, the outer table of the exposed bone was chipped away exposing the medullary cancellous bone. Granulation tissue appeared in four to six days. On Sept. 28, 1950, with the patient under general anesthesia, the surgeon cut a half drum of skin from the right flank with a Padgett dermatome. The forehead wound was then débrided, and more of the outer table of bone removed in several areas; the graft was cut to pattern and sewed into the defect. The graft took well and healing progressed slowly but completely. The treated site has remained well for approximately three years. At a recent inspection of the treated area, there was no indication of a persistence of the carcinoma.

The morphea-like epithelioma presents special treatment problems. This lesion should be treated only by excision or by the implantation of low intensity radium needles. Wide publicity should be given to the fact that this relatively rare type of scirrhous cancer of the skin is curable with low intensity radium needles used interstitially. Three such lesions on the forehead have been treated successfully by using low intensity radium needles. During a follow-up period of approximately three years, no recurrences have been observed on these patients. Four other persons with morphea-like carcinomas over the head and neck regions have been treated successfully with low intensity radium needles. If this technique is not available or applicable, surgical excision is advisable.

Group 3.—This group includes lesions of the scalp that involve bone but not the meninges. When bone is invaded by cancer from the scalp, the management should be surgical, and the patient should be attended by a neurosurgeon.[12] Radiation has been demonstrated to be ineffective; it has no selective destructive effect on the cancer that has invaded bone. The use of radiation in cauterizing quantities to destroy the invading cancer and bone is dangerous and inferior to present-day neurosurgical management.

The surgical principles in treatment are (*a*) complete removal of the diseased bone (débridement is essential), (*b*) microscopic control, and (*c*) primary closure of the defect if possible or the use of a rotating scalp flap if the defect is too large. Rather than delaying plastic repair 6 to 12 months to rule out persistent carcinoma, as some suggest, Weary advocates primary closure of the defect, if possible, or the use of the proper type of graft promptly. Frequent x-ray studies of the margins of the bone defect combined with clinical examination of the soft tissues will suggest or rule out persistent carcinoma. After 12 to 18 months, if there is no evidence of persistent carcinoma, cranioplasty with a tantalum plate to repair the bone defect may be carried out if desired.

Group 4.—This group includes lesions of the scalp that have penetrated to the meninges and/or brain. The treatment is surgical. A craniotomy should be done, and a bone flap extending well beyond the area of involvement should be removed. The involved bone and dura are removed as a block resection including generous margins of normal surrounding tissue. If the cortex is involved, the diseased area and an adequate margin may be removed by sharp dissection depending on the region of cortex involved. The dura should be replaced by a fascial graft followed by primary closure of the defect. For plastic repair, a full thickness pedicled scalp flap should be used.

SUMMARY

The relatively common primary sources of metastatic carcinoma of the scalp are listed. A brief résumé of the clinical variants of primary carcinoma of the scalp is given, and the importance of basal cell epithelioma of multicentric origin is emphasized. The natural course of the disease is discussed, and the routes of spread are pointed out. The dangers and complications of irradiation in the treatment of large cancers of the scalp are reviewed. The controversial subject of present-day treatment of large cancerous lesions involving the scalp is discussed.

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ROENTGEN IRRADIATION IN THE TREATMENT OF EPITHELIOMA

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For 25 years we have been using both radiotherapy and surgery for the treatment of skin cancer. After treating thousands of patients during this long period, we still use both. Both methods are good, both are reliable in experienced hands, and both regularly produce a perfect cure on scheduled time. Sometimes one method is more suitable than the other; sometimes a combination may be used, or one can use electrosurgical methods. The modern dermatologist is experienced in all of these modalities. There are many reasons why x-ray therapy is used so widely for skin cancer. In the first place, it is successful. It is also painless and bloodless. These facts appeal to patients, especially those who are old or in poor health. From a scientific viewpoint radiation treatment also has advantages. It is possible to cover a wider field about the edges of the cancer than that usually accomplished with surgery. The less the surgeon cuts beyond the visible border of the growth the better his cosmetic result will be. The more he cuts the more difficult the operation becomes. Thus, x-ray, and especially radium therapy cover a wider area and for this reason are more likely to destroy outlying cancer cells and to have a completely lethal action on the tumor.

Morphological reconstructions of skin cancers show that they extend from the primary site (or sites) in the skin in no uniform pattern. Some are shaped like icebergs, just a little showing at the surface and spreading out widely below the surface. A wedge-shaped surgical excision is just the wrong method to use for the iceberg type. Some are shaped like tinker toys, with strands of tumor cells running off from the visible skin lesion and with deeper nodules at the ends of these strands or connected by these strands. The shapes are of an infinite variety, and frequently the changes that indicate extension into the nearby skin are scarcely perceptible and only recognizable by a dermatologist specially trained and experienced in this field. In another type, the superficial epithelioma may extend within the epidermis or in a multicentric manner for several centimeters outside the discernible skin tumor into apparently normal skin. For these reasons the customary excision may be inadequate and the wider field covered by x-ray therapy is advantageous.

DIVIDED DOSE TECHNIQUE

Like all branches of science, radiotherapy has improved greatly in the last 30 years. As far back as 1923 it was known that 10 erythema doses of x-rays were required to kill cancer cells, but then we did not know how to give such a dose without injuring normal tissues and causing skin necrosis. It is only in the last 15 years that the divided dose method of x-ray therapy has been developed so that such a large dose can be given without simultaneous destruction of normal tissue. In 1925 we used a single so-called massive dose of 2½ erythema doses, roughly the equivalent of 1,000 r. This illustrates the tendency in those days to use doses that were too small and to produce an unsightly atrophic scar by giving a single dose instead of divided doses. With the modern technique that we have used for the past 15 years, the total dose averages 5,000 r or more. It is divided into 8 to 10 treatments, so that the cosmetic result is perfect. The fractionization of radium and x-ray dosage makes it theoretically possible to maintain for one to several weeks a saturation dose lethal to cancer cells in the tissues. Since cells are especially susceptible to x-rays during mitosis, this method of irradiation is highly destructive to cancer. Pathological cells are in general more radiosensitive than normal cells, and cells of the embryonal type, or young, actively growing neoplastic cells, are more sensitive than well-differentiated or normal cells.

The total number of roentgens is influenced by the size of the field. The larger the field the more secondary radiation occurs from the iron in the blood and from other tissue elements. Therefore, the lethal dose that is required to kill the cancer cells is less measured in air when the field is large. Experience has shown that for epitheliomas 1.5 cm. or less in diameter the total dose should be 6,000 r at 100 kv. (half value layer 1 mm. Al). Some very superficial basal cell epitheliomas of this size may be treated by 8,000 r at 60 kv. (H. V. L. 0.7 mm. Al) or by Philips contact x-ray at 45 kv., using 10,000 r (H. V. L. 0.55 mm. Al). Failures are always due to improper technique and usually fall into two categories, that is, insufficient field about the visible part of the tumor and incorrect appraisal of the depth to which the lesion extends. For the latter reason we generally prefer to use at least a quality of H. V. L. 1 mm. Al and sometimes H. V. L. 4.4 mm. Cu (140 kv. 0.25 mm. Cu + 1 mm. Al filter). For larger lesions the total dose is lessened. Lesions from 1.5 to 3 cm. in diameter usually receive a total of 5,000 r at 100 kv. (H. V. L. 1 mm. Al). Softer qualities of radiation generally should not be used for such large lesions unless they are definitely of the superficial type. For tumors over 3 cm. in diameter the total dose may be lowered to 3,000 or 3,500 r, depending not only on the size but also on the location and bulk.

A common place for skin cancer to develop is at the inner canthus of the eye. This location presents the danger of spread into the orbit and ultimate destruction of the orbital contents. Surgical removal may necessitate repair of the lower lid and may injure the lacrimal duct. X-ray treatment usually prevents these two hazards, and for old persons it is simpler and easier. The eyeball is amply protected by a metal shield placed beneath the

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Read in the Symposium on Cutaneous Malignancy, an Appropriate Segment of Dermatology, before the Section on Dermatology and Syphilology at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

lids, and the dosage is fractionated. One usually uses a long anode-skin distance to minimize the irregularity in contour. Sometimes such lesions extend over the root of the nose to the opposite side. These lesions are treated by alternating exposures, first to one side and then to the other. For small epitheliomas on the edges of the lids Philips contact therapy is ideal.

Approximately one-quarter of all skin cancers occur on the nose. There are so many differences as to size, depth, location, involvement of cartilage, ulceration, kind of previous treatment, age of patient, and other more or less important factors, that too much generalization might lead to misconceptions. Small epitheliomas in healthy persons may be readily excised. I treat other epitheliomas—that is to say, the larger, deeper ones, especially in the aged—by x-rays. Roentgen therapy, generally speaking, is the best method of treatment for epitheliomas on the nose and gives excellent results on large epitheliomas, usually far superior to the results of surgery.

RESULTS IN ONE THOUSAND CASES

Unfortunately through the years, owing to lack of space, we have thrown away charts of patients who died or were free from recurrence for over five years in order to clean out our files of inactive charts. This was a serious mistake, but it is still impossible to obtain storage space in the cellar of our building. What actually happened was that the charts of the patients we cured were in time thrown out, whereas those of patients we did not cure were kept in our files. We are, therefore, in a weak position regarding statistics. We have, however, taken at random 1,000 reports of cases of epithelioma from our files. Of these, 410 cases were proved by biopsy. Two hundred twenty were followed for five years or more. In the 1,000 patients there were recurrences after treatment in 3.5%. These were later cured by other means. Various forms of treatment were used. Three hundred sixteen patients were treated by surgical excision, 103 by electrosurgery supplemented by irradiation, and 581 by irradiation alone. Of those followed five years or more, several were treated by radium or x-ray techniques that were entirely inadequate according to modern standards and are now obsolete. The five year cure rate in the 220 patients was, therefore, only 93%, in contrast to 96% for those patients of this group treated by surgical excision and to 97.5% for the 316 patients treated by surgical excision out of the 1,000 cases selected for analysis. We had a little over 98% of cures in 438 patients after treatment by divided doses of roentgen rays with the modern technique of 8 to 10 treatments totaling 3,000 to 6,000 r (or more with the Philips contact x-ray machine or other soft qualities of radiation, produced at 45 to 60 kv. and having a half value layer of 0.3 mm. to 0.55 mm. Al). Two hundred seventy-eight of these patients were treated five or more years ago. It is, however, impossible for us to claim these figures, since we have not been able to contact many of the patients recently. The records of many have been lost, and many have changed addresses or have died of old age or other causes. We can claim verified complete cures of over five years in only 98.9% of 94 patients treated by the modern x-ray divided dose technique.

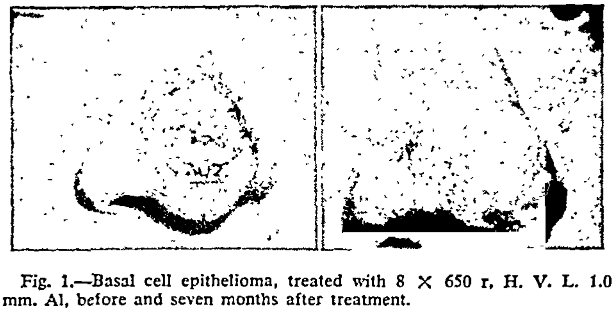

Fig. 1.—Basal cell epithelioma, treated with 8 × 650 r, H. V. L. 1.0 mm. Al, before and seven months after treatment.

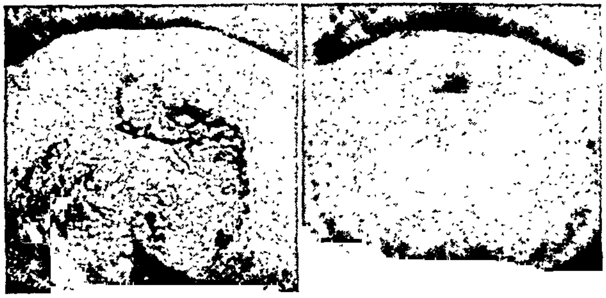

Fig. 2.—Squamous cell epithelioma, treated with 10 × 500 r, H. V. L. 1.0 mm. Al, before and two months after treatment.

Of the 410 patients who had biopsies, 333 (81%) had basal cell epitheliomas, 57 (14%) had squamous cell epitheliomas, 20 (5%) had basosquamous mixed or transitional or Bowenoid. Of the 590 patients who did not have biopsies, the clinical diagnosis was basal cell epithelioma in 514 patients (86%), squamous cell epithelioma in 68 patients (12%), and 1.5% in the group with mixed cell epithelioma. These figures substantiate the accuracy of clinical diagnosis, the largest error being in mixed cell cases.

Of the 1,000 patients whose cases were analyzed it is interesting to note that over 50% were 60 years of age or older. Two hundred fifteen (21%) were over 70 years of age. The sex ratio of the 1,000 patients was 5 males to 4 females. Forty-six epitheliomas (4.6%) were located at the inner canthus and 229 (23%) were situated on the nose. Only one of the 1,000 patients had radionecrosis or undesirable injuries from the treatment. He was treated by radium in 1939 by a now obsolete technique for an epithelioma of the ear. The injured portion of the helix was later excised.

115 E. 61st St. (21) (Dr. Andrews).

Vaccination During Pregnancy.—Vaccination of a pregnant woman may, though very rarely and perhaps only in special circumstances, lead to fatal generalised vaccinia of the foetus. Vaccination of a pregnant woman during the first trimester of pregnancy, and especially during the second and third months of pregnancy, significantly increases foetal mortality.

If these findings are confirmed by others, it will be clear that vaccination should never be done during the first trimester of pregnancy as part of routine public protection, and that it should be done at this stage of pregnancy only in women who have been in contact with smallpox. Damage to the foetus is done, however, only during the first trimester of pregnancy, and there is virtually no risk from vaccination during the later months.—Patrick MacArthur, M.D., Congenital Vaccinia and Vaccinia Gravidarum, *The Lancet,* Dec. 6, 1952.

RHEUMATIC AND FEBRILE SYNDROME DURING PROLONGED HYDRALAZINE TREATMENT

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Recent experience has extended and confirmed our impressions of the effects of treatment of hypertension with hydralazine hydrochloride (1-hydrazinophthalazine, Apresoline [1]) as the sole antipressor agent.[2] A favorable result is commonly observed; the untoward toxic side-effects, formerly described, appear and usually disappear as the drug is used. In the doses used, tolerance, which others [3] using smaller doses have observed, is rare. Some patients have become slightly anemic, partly, it would seem, as a result of anorexia, but severe anemia [4] is exceptional.

Another striking complication of treatment has appeared in some of our patients; this seems to be related to the use of large doses of hydralazine over long periods of time. The syndrome in its less severe form resembles rheumatoid arthritis; in its severer febrile aspect, it simulates acute systemic lupus erythematosus. It is described in this report because of the natural interest attached to a complication of treatment with a drug in common use and because of its possible bearing on the pathogenesis of systemic lupus erythematosus.

METHOD OF STUDY

The report is based on observations in 13 of 139 patients being treated with hydralazine as the sole antipressor agent. The severity of hypertensive disease was estimated, and the disease type was classified, as previously described.[2] The severity index [5] is adjusted so that the patients with the severest disease score a maximum index of 16 and those with the least disease score an index of 1. The classification and severity index were established during a control period of outpatient or hospital observation; the therapeutic response was evaluated by regular observations of various aspects of cerebral, cardiac, and renal vascular function.[2] Treatment of these 139 patients with large doses of hydralazine (400-800 mg. daily) over long periods of time was considered desirable because favorable control of arterial pressure and vascular disease was obtained in most of them.

Of the 13 patients in whom the syndrome developed, 11 showed excellent control of arterial pressure; diastolic pressure was persistently below 100 mm. Hg in 8, and it averaged 100 mm. Hg in 2 and 105 mm. Hg in 1. Of the two patients with unsatisfactory responses, one showed a drop in diastolic pressure from 125 to 115 mm. Hg; the other patient had a drop in diastolic pressure from 130 to 100 mm. Hg, but, after three months, the pressure slowly rose to pretreatment levels.

The onset of the syndrome, in either its rheumatoid or its febrile form, prompted a variety of special studies. Roentgenograms were made of involved joints and systems, biopsies were taken of inflamed tissues and, in some cases, of muscle; other studies included white and red blood cell counts, measurements of hemoglobin level, sedimentation rate, serum polysaccharide, serum protein (by electrophoresis), and searches for L. E. factor [6] by the dog-marrow, patient-plasma method and by examination of the bone marrow for L. E. cells.[7] In patients with the febrile illness, additional studies included cultures of urine, blood, and pleural and pericardial fluids, examination of sputum, and, in one case, examination of gastric washings, as well as a battery of agglutination tests and skin tests for tuberculosis and histoplasmosis.

THE SYNDROME

The illness that developed in the 13 patients appeared in a mild rheumatoid and a severer febrile form; reasons for supposing that these two were expressions of a single disease are noted below. That this illness was a result of maintenance with large doses of hydralazine over long periods of time seems very likely; it was not observed in patients followed over a shorter mean period. The mean time of onset in the group was 12 months after starting hydralazine treatment; the longest interval in the group was 22 months, although in this patient the 22 months were not continuous, since treatment had been interrupted between the 15th and 18th months. The average maintenance dose was 640 mg. daily; dosage was constant except in one patient who varied his dose irregularly from 200 to 800 mg. and in one whose treatment was suspended for three months.

The types of the hypertensive disease varied widely and included the diencephalic syndrome, renal hypertension, mild and severe essential hypertension, and hypertension in its malignant phase. The severity index ranged from 2.2 to 9.6; neither type nor severity influenced the onset of the syndrome. Responsiveness to the antipressor effect of the drug did not seem to be a factor; only exceptionally did a patient (in this group) who did not respond favorably continue to receive the drug

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From the Research Division of the Cleveland Clinic Foundation and the Frank E. Bunts Educational Institute.

Dr. E. L. Posey of Jackson, Miss., supplied the clinical and laboratory data on the acute phase of the illness of the patient in case 2.

[1] This product was supplied by Ciba Pharmaceutical Products, Inc.

[2] Taylor, R. D.; Dustan, H. P.; Corcoran, A. C., and Page, I. H.: Evaluation of 1-Hydrazinophthalazine ("Apresoline") in Treatment of Hypertensive Disease, A. M. A. Arch. Int. Med. **90**: 734 (Dec.) 1952.

[3] (*a*) Grimson, K. S.; Chittum, J. R., and Metcalf, B. H.: Actions of 1-Hydrazinophthalazine (C-5968) on Vasomotor Reflexes and Hypertension in Dogs and Man, Fed. Proc. **9**: 279, 1950. (*b*) Johnson, R. L.; Freis, E. D., and Schnaper, H. W.: Clinical Evaluation of 1-Hydrazinophthalazine (C-5968) in Hypertension: With Special Reference to Alternating Treatment with Hexamethonium, Circulation **5**: 833, 1952.

[4] Kaufman, M.: Pancytopenia Following Use of Hydrallazine ("Apresoline"): Report of Case, J. A. M. A. **151**:1488 (April 25) 1953.

[5] Severity index is calculated from a summation of all clinical and laboratory findings of four panels: blood pressure, degree of cardiac, renal, and cerebrovascular disease. Each panel contributes a maximum score of four.

[6] Haserick, J. R., and Bortz, D. W.: Normal Bone Marrow Inclusion Phenomena Induced by Lupus Erythematosus Plasma, J. Invest. Dermat. **13**: 47, 1949.

[7] Hargraves, M. M.; Richmond, H., and Morton, R.: Presentation of Two Bone Marrow Elements "Tart" Cell and "L.E." Cell, Proc. Staff Meet., Mayo Clin. **23**: 25, 1948.

for long periods. The syndrome arose independently of the presence, nature, or severity of initial toxic symptoms. Allergic diatheses did not seem to cause predisposition to the syndrome; only 6 of the 13 patients gave any indications of allergic disorders in themselves or their relatives; 1 had had contact dermatitis, 1 had had urticaria, and 2 had relatives with asthma. Less convincingly one had had rheumatic fever as a child, and one gave a history of migraine.

The Rheumatic Phase.—The rheumatic phase appeared in all 13 patients (table 1) as a complaint of migratory arthralgia, which was most frequent and most persistent in the interphalangeal joints of the hands and less commonly in the wrists, elbows, shoulders, and knees. Only rheumatic manifestations developed in eight patients (table 1, *A* [rheumatic phase]). The involved joints were stiff and tender; those more severely affected (interphalangeal joints and wrists) became red and swollen and warm; the fusiform swelling of interphalangeal joints resembled that of rheumatoid arthritis (table 1, *A*). Roentgenograms of involved joints showed only soft tissue swelling.

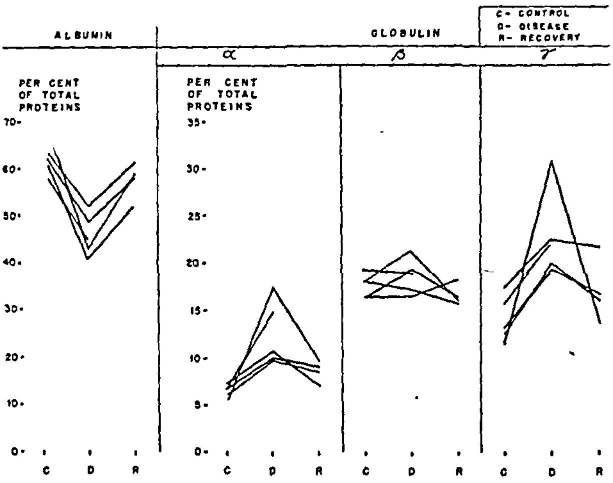

Fig. 1.—Percentile concentrations of albumin and globulin fractions of serum proteins before (C), during the height of (D), and after recovery (R) from the febrile phase of the hydralazine-induced syndrome. Similar changes were found in three patients with the rheumatic phase of the disease.

Sedimentation rates were elevated in four patients, and serum polysaccharide concentration increased in three. The blood hemoglobin level fell from 13.4 to 11.5 gm. per 100 ml. in one patient; and the white blood cell count fell from 8,350 to 4,500 per cubic millimeter in another (table 2, *A*). Proteinuria, hematuria, and cylindruria did not increase during the illness; these sometimes tended to improve; thus two patients showed significant reduction of proteinuria and five a decrease in hematuria.

The most impressive laboratory evidences of this illness were found in the changes in serum protein distribution, as measured by the Tiselius method, in three patients. These were similar to those found in patients in whom the severe febrile phase of the illness developed. They consisted of a decrease in serum albumin and increases in alpha and gamma globulins; thus, the third patient showed a decrease in albumin from 62 to 49% of total protein, an increase in alpha globulin from 6.7 to 10%, an insignificant change in beta globulin (increase from 18 to 21%), and an increase in gamma globulin from 12.8 to 19.6% of total protein. Similar changes occurred in the fifth and eighth patients, and changes of this sort occur in acute systemic lupus erythematosus.[8] What seemed to be a transition into the febrile form of the disease was seen in one patient, whose joint symptoms were accompanied by chills and temperature to 102 F. The temperature fell when hydralazine therapy was discontinued, and fever recurred when the drug was given again.

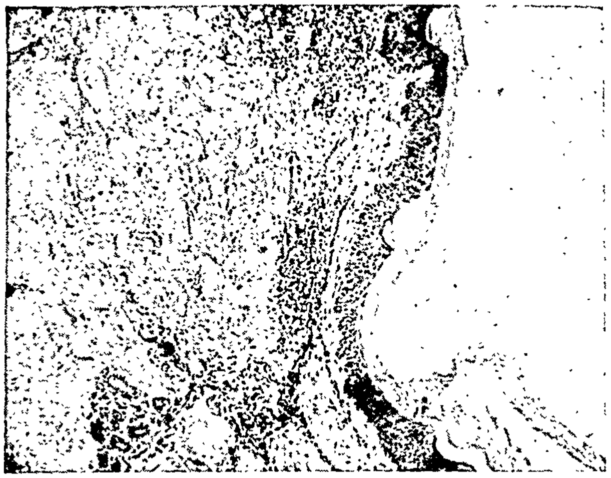

Fig. 2.—Irregular collections of inflammatory cells in the upper cutis; included are polymorphonuclear leukocytes, lymphocytes, eosinophils, and stroma cells. There is slight edema of collagenous areas. The diagnosis was nonspecific dermatitis of the erythema group.

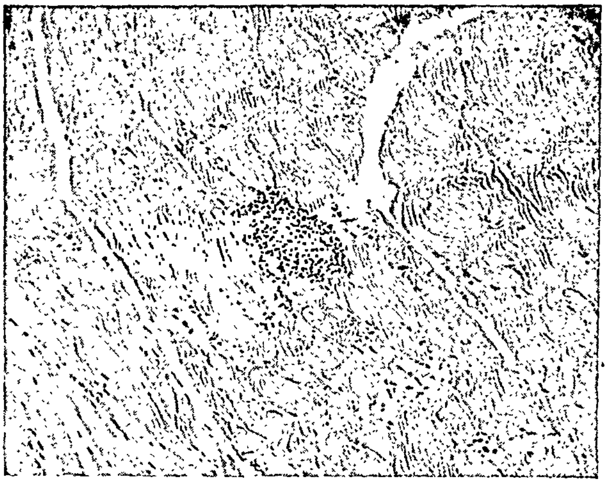

Fig. 3.—Lymphorrhagia throughout the muscle and particularly around blood vessels. The collagen is normal. This nonspecific reaction is seen in rheumatoid arthritis, rheumatic fever, dermatomyositis, and systemic lupus erythematosus.

The course of the illness in the eight patients whose manifestations were primarily rheumatic, including the one who had fever, was characterized by joint pains that were, on the whole, severer than in those who went on into the febrile phase. Four of the eight patients were disabled by arthritis.

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[8] Lewis, L. A., and Haserick, J. R.: Unpublished data.

TABLE 1.—*Symptoms and Signs in Thirteen Patients Receiving Hydralazine*

Patient	Sex	Age	Pretreatment Severity Index, 0-16	Average Diastolic B. P., Mm. Hg: Control	Average Diastolic B. P., Mm. Hg: Drug	Early Toxic Symptoms	Daily Dose Hydralazine, Mg./Day	Asymptomatic Treatment Period, Months	Symptoms and Signs	Duration of Symptoms After Hydralazine Therapy, Days	Exacerbating Dose of Hydralazine, Mg./Day
						A. Rheumatic Phase					
1	F	48	8.8	130	100	Headache, palpitation	500	6	Painful, red swollen joints, hands, wrists; stiffness of elbows and shoulders	1	200
2	M	45	7.4	125	115	None	700	6	Pain and stiffness of all joints	28	200
3	M	57	8.4	117	95	Burning of face	400	9	Stiff, painful, swollen joints, hands, and wrists; chill; temperature to 102 F	28	100
4	F	44	5.8	130	105	Chills, fever, headache	600	9	Stiff joints, especially hands and wrists	14	200
5	F	41	8.8	130	95	Headache	800	7	Stiff, painful joints; fusiform swelling of hand and wrists	8	200
6	F	58	2.2	110	90	Dizziness	700	11	Stiff, painful joints; fusiform swelling of hand and wrist joints	1	200
7	M	40	7.8	118	100	Headache, vomiting, purpura, fever, thrombophlebitis	800	12	Stiff, painful, red swollen fingers; stiffness of knees	2	200
8	M	47	8.2	120	90	Headache	800	13	Stiff, painful, swollen joints, wrists, and fingers	Not discontinued	...
						B. Febrile Phase					
9	M	46	9.6	122	90	Nausea	800	18	Discomfort of joints of hands; erythema of hands and forearms; fever; prostration	7	No recurrence 200
10	M	60	7.6	122	85	None	800	18	Stiff, swollen finger joints; dyspnea; weakness; abdominal pain; fever; pleural and pericardial effusion	21 terminated with corticotropin	No recurrence 200
11	M	38	8.8	126	80	Burning of face, palpitation	800 (6 mo.) 600 (5 mo.)	11	Painful, red swollen finger joints; chest and abdominal pain; fever; prostration; pleural and pericardial effusion	14	600
12	M	52	9.4	130	100-130	Anorexia, conjunctivitis	800 (14 mo.) 0 (4 mo.) 500 (4 mo.)	22	Painful, red swollen finger joints; fever; muscle and substernal pain; pleural and pericardial effusions	Persisted until treated with corticotropin	...
13	F	36	9.6	135	80	Headache, palpitation, nausea, and vomiting	600	17	Painful, red swollen finger joints; fever prostration; cough; pneumonitis	7	...

TABLE 2.—*Laboratory Observations on Thirteen Patients Receiving Hydralazine*

Patients	L. E. Test		Serum Polysaccharides, Mg./100 Cc.		Erythrocyte Sedimentation Rate, Mm./Min.		Blood Hemoglobin Level, Gm./100 Cc.			White Blood Cell Count, No./Mm.³			Urinary Proteins, Gm./24 Hr.			Urinary Tubular Casts, Millions/12 Hr.			Urinary Erythrocytes, Millions/12 Hr.		
	D*	A†	D	A	D	A	B‡	D	A	B	D	A	B	D	A	B	D	A	B	D	A
A. During Rheumatic Phase																					
1	..	..	160	....	....	....	11.2	12.4	....	9,700	6,000	.....	0.46	0.10	....	0.030	0.100	.....	4.0	0.84	....
2	..	..	...	...	....	....	14.4	13.4	....	6,200	6,050	.....	....	....	....	.....	.....	.....	....	....	....
3	0	..	...	...	1.26	....	12.6	12.6	....	6,000	5,700	.....	0.42	0.46	....	0.273	0.117	0.087	0.58	0.053	0.39
4	..	..	...	...	....	....	11.8	11.8	....	6,400	5,700	.....	0.04	0.12	....	0.032	0.014	.....	0.256	0.256	....
5	..	..	...	...	1.6	....	10.8	12.2	....	8,350	4,500	.....	1.58	0.56	....	0.043	0.002	.....	1.5	0.389	....
6	0	..	160	...	0.52	....	14.0	12.2	....	7,200	6,000	.....	0.02	0.12	....	0	0.003	.....	1.1	0.285	....
7	0	..	156	140	0.92	....	15.0	15.2	....	9,800	4,600	.....	0.14	Trace	....	0.347	0.163	.....	0.12	0.315	....
8	0	..	166	...	1.0	....	13.4	11.5	....	7,500	6,800	.....	0.36	Trace	....	0.025	0.006	.....	5.5	0.690	....
B. During Febrile Phase																					
9	0	0	...	140	....	0.5	13.4	10.8	14.0	6,300	3,400	4,500	....	....	....	.....	.....	.....	....	.....	....
10	0	0	...	164	....	....	12.8	10.0	12.0	6,700	4,500	5,700	0.40	....	0.09	0	.....	0	1.4	....	0.85
11	0	0	226	...	1.05	0.45	13.2	9.4	12.4	6,900	3,300	5,500	0.32	0.12	0.08	0.850	0.048	0.044	0.299	0.864	0.750
12	+	?	236	...	1.3	0.18	14.2	10.4	12.2	7,050	4,650	9,700	1.74	0.41	0.60	0.240	0.032	0.028	0.92	0.36	0.43
13	+	0	256	160	....	0.8	12.0	7.8	13.0	4,850	8,750	5,450	0.37	0.20	0.6	0.024	0.019	0.055	0.18	0.696	0.15

* D = during rheumatic or febrile phase. † A = after rheumatic or febrile phase. ‡ B = before hydralazine therapy was begun.

Most of the eight patients had been taking antihistaminics as part of their system of hydralazine treatment; in these the dosage of the antihistaminic (tripelennamine [Pyribenzamine] citrate) was increased from 200 mg. to 600 mg. daily, with the onset of arthralgia, which, however, it failed to control. Acetylsalicylic acid (aspirin) (3 to 6 gm. daily) gave relief to some but was ineffective in most. Ascorbic acid, nicotinic acid, isoniazid (isonicotinic acid hydrazide), nitrogen mustard, and hexamethonium chloride were given various patients in the hope of controlling the condition and maintaining hydralazine therapy; all were completely ineffective.

Cortisone and corticotropin (ACTH) gave symptomatic relief when they were given at the height of the rheumatic state. Steroidal therapy was continued in one patient over a period of four months. This patient had had a syndrome of malignant hypertension that responded favorably to hydralazine for seven months, during which her pressure averaged 160/90 mm. Hg. Discontinuance of therapy with the drug at the onset of the rheumatic illness resulted in a prompt rise of pressure to an average level of 230/130 mm. Hg; therefore, she was again given hydralazine, and the rheumatic state was suppressed successfully for four months, with 25 mg. of cortisone given four times daily. At the end of this time the patient's symptoms recurred, in spite of cortisone therapy.

The most effective means of causing the rheumatic phase to abate was to withdraw medication. Symptoms disappeared, on the average, within a week; one patient was completely relieved at the end of 24 hours and another not until 4 weeks. This last patient had continued using hydralazine for eight weeks while suffering from generalized joint pain and stiffness that was not relieved by aspirin. Hydralazine therapy was discontinued and another drug given over a period of 18 months, at the end of which hydralazine therapy was reinstituted and tolerated in a dose of 250 mg. daily with no return of joint pain. With this exception, all patients had recurrence of the rheumatic state when treatment was reinstituted; however, three have been able to take hydralazine at lower doses (150 to 300 mg. daily) while they also used aspirin as a means of controlling their residual recurrent discomfort.

The Febrile Phase.—The term "febrile phase" was used to describe the illness that supervened in five patients (tables 1, *B* and 2, *B*) and that, as will be shown, resembled acute systemic lupus erythematosus. The average duration of therapy in these patients before the onset of the rheumatic symptoms that preceded the febrile phase was longer than in those who had the rheumatic phase only; furthermore, these patients continued taking hydralazine after the onset of joint symptoms, three of them because the symptoms were relatively mild and two, whose distress was greater, by reason of their determined dispositions. Consequently, the average duration of treatment before the onset of the febrile phase was 17 months.

The initial rheumatic state of these patients was succeeded, after varying intervals, by a syndrome of temperature as high as 105 F, prostration, chest and abdominal pain, and physical and laboratory signs resembling those of acute systemic lupus erythematosus; in three patients polyserositis developed with pleural and pericardial effusions, one had extensive, nonspecific pneumonitis, and one had erythema of the hands and forearms. Details of each case are summarized in case reports below.

The outcome of the febrile illness was varied; in the patient whose major manifestation was erythema, the febrile illness subsided while hydralazine therapy was continued; the patient who manifested pneumonitis recovered after withdrawal of hydralazine and while she was being given isoniazid; of the three with polyserositis, one recovered after withdrawal of hydralazine, one responded to a course of corticotropin and cortisone, and the other remained on a maintenance steroidal program. As those with the rheumatic phase only, patients with the febrile illness did not show increased proteinuria, hematuria, or cylindruria. Arterial pressure, as compared to pretreatment control levels, was greatly decreased during the febrile illness and for some days thereafter.

REPORT OF CASES

CASE 1.—A 46-year-old man (ninth patient, table 1, *B*) had been successfully treated for the malignant phase of essential hypertension with hydralazine, 800 mg. daily. For 18 months his diastolic blood pressure averaged 100 mm. Hg, as compared with pretreatment averages of 120 mm. Hg. The present illness began three weeks before he visited the outpatient department. After three days, he was treated with generalized ultraviolet light irradiation, which was followed in 24 hours by a blotchy erythema over the hands, forearms, neck, and face. His symptoms subsided, but the erythema persisted. He lost 10 lb. (2.3 kg.) in weight, and his blood pressure averaged 150/70 mm. Hg. He took medication throughout this time. On his visit as an outpatient, he appeared chronically ill with a temperature of 98 F, pulse rate of 96, and blood pressure of 148/88 mm. Hg; a blotchy erythema covered the dorsa of the hands and forearms, the forehead, and the neck. The heart was slightly enlarged on the left side. The spleen was palpable 3 cm. below the costal margin, as it had been three months previously. The blood hemoglobin level was 10.8 gm. per 100 cc. and the white blood cell count was 3,400 per cubic millimeter. The L. E. test was negative. The Tiselius protein pattern showed depression of the albumin fraction and elevation of the alpha and gamma globulin fraction (fig. 1). A biopsy specimen of the inflamed skin is shown in figure 2.

By a misunderstanding, hydralazine therapy was continued for 10 days, during which time erythema persisted without other symptoms. When the drug was withheld for three weeks the rash disappeared, the hemoglobin level rose to 13.3 gm. per 100 cc., the leukocyte count to 4,500, and the blood pressure to 170/96 mm. Hg. The drug was given again at a dosage of 200 mg. per day. Seven weeks later, the patient had slight discomfort of the interphalangeal joints of the hands. The serum protein pattern, however, returned nearly to normal. The patient now takes 100 mg. of hydralazine daily, without recurrence of any of his previous symptoms or signs.

CASE 2.—A 60-year-old man (10th patient, table 1, *B*) took 800 mg. of hydralazine daily for 18 months because of severe essential hypertension with retinopathy. He felt well until the last three to four months of this time, when he had three episodes of upper respiratory tract infection; during the last six and a half weeks the interphalangeal joints became swollen, stiff, and painful. He was admitted to another hospital for study. He had fever, clinical and roentgenographic evidence of pleural and pericardial effusions, leukopenia, increased sedimentation rate, and anemia. Examinations of the peripheral blood to demonstrate the L. E. factor were negative, as were urine and sputum cultures, specific febrile agglutination tests, and tuberculin tests. The use of hydralazine was discontinued. The patient was given penicillin, chlortetracycline (aureomycin), and streptomycin without effect on fever or the course of the illness. Therapy with corticotropin was begun, and within 48 hours he was afebrile, and the signs and symptoms of the disease began to disappear; use of corticotropin was soon discontinued. A few days later, the patient remained asymptomatic and began using hydralazine again on the day of his discharge from the hospital. When we saw him five weeks later, his only complaint was decreased endurance; he had taken 100 to 600 mg. of hydralazine daily without incident. The only residual findings were roentgenographic evidence of old pleural reaction and elevated gamma globulin level (fig. 1).

Case 3.—This 38-year-old man (11th patient, table 1, *B*) responded favorably to hydralazine in doses of 800 mg. daily for the first five months and 600 mg. daily for the next six months. He noted the onset of pain and stiffness of fingers, wrists, elbows, shoulders, knees, and ankles and swelling of the interphalangeal joints of the hands; these findings were inconstant at first and then became persistent. Acetylsalicylic acid gave partial relief. The patient continued in this condition for two months, during which he also noted migratory pains in the muscles of the abdomen and chest. He became acutely ill two weeks before admission; he complained of pleurisy, malaise, and temperature to 104 F daily. Chlortetracycline gave no relief; use of hydralazine was continued until one day before admission. On admission, the man had the appearance of one who is both acutely and chronically ill. He had a temperature of 102 F, pulse rate of 120, respiration of 24 per minute, and blood pressure of 180/90 mm. Hg. The heart was enlarged to the left; a grade 2 systolic murmur and a pericardial friction rub were heard. The lower third of both lung fields was dull to percussion, with diminished fremitus and breath sounds. The proximal interphalangeal joints of both hands were swollen. The blood hemoglobin level was 9.4 gm. per 100 cc., the white blood cell count was 3,300 per cubic millimeter, serum polysaccharide 226 mg. per 100 cc., and erythrocyte sedimentation rate 1.45 mm. per minute. The chest roentgenogram showed evidences of pericardial and bilateral pleural effusion. The plasma L. E. test was negative, as was the tuberculin skin test. Pleural and pericardial fluids were sterile; the former had a specific gravity 1.018, with 2,100 lymphocytes per cubic millimeter. The electrophoretic analysis of serum proteins gave findings characteristic of this group of patients. Treatment was expectant only; the patient was maintained on a diet containing 0.5 gm. of sodium per day, and his discomforts were relieved with aspirin; over a period of three weeks, all signs of the illness disappeared. On the 23rd hospital day, he was given 25 mg. of hydralazine intramuscularly and palpitation and facial flush developed. On the following day, his morning temperature was 100.2 F, and his hands were stiff and sore but not swollen. Starting on the 25th hospital day, he was given increasing doses of hydralazine, first intramuscularly and then orally, until on the 34th day he was taking 600 mg. daily, which dose was continued for another 8 days; during this 17 day period of treatment he experienced arthralgias, pleuritic pains, and migratory myalgia, and his temperature ranged to 99.4 F or 100.6 F daily. The laboratory evidences of his former illness, which had subsided, did not recur during this time. The use of hydralazine was discontinued, however, because of the patient's discomfort; he was then given iproniazid and was discharged from hospital in good health. He has remained well.

Case 4.—A 52-year-old man (12th patient, table 1, *B*) was given hydralazine for the control of severe essential hypertension with only a moderate success, so use of the drug was discontinued after an average daily dose of 500 mg. had been taken for 14 months. Treatment was reinstituted four months later, and the dose was rapidly increased to 800 mg. daily; because of lassitude and anorexia the dosage was further decreased, to 400 mg. daily, at which level it was kept for four months. During the last of these months, the patient began to experience pain and slight swelling of the wrists and interphalangeal joints and myalgia in the muscles of his legs. Two weeks later, malaise, substernal pain, a cough productive of mucoid sputum and a daily temperature range to 104 F developed. During the second week of this illness, the joint and muscle distress disappeared. Erythromycin and chlortetracycline gave no relief, and admission to the hospital was advised. Since the patient's blood pressure had fallen to normal levels, the use of hydralazine was discontinued for three days before admission on the 12th day of the severe illness. On admission, he seemed acutely ill, with temperature of 101.6 F, pulse rate of 100, and respirations 20 per minute. Arterial pressure was 148/100 mm. Hg. The fundi showed constriction of 1+ and sclerosis of 2+. The left border of cardiac dulness was 14 cm. from the midsternal line in the fifth intercostal space. A pericardial friction rub was heard. The lower third of both lung fields was dull to percussion posteriorly, with diminished breath sounds and a few, scattered, fine rales.

Chest x-ray showed evidences of pericardial and bilateral pleural fluid accumulations. The blood hemoglobin level was 11.0 gm. per 100 cc., white blood cell count 4,650 per cubic millimeter, sedimentation rate 1.3 mm. per minute, and serum polysaccharide 200 mg. per 100 cc. The plasma L. E. test was negative, but sternal marrow showed changes suggestive of lupus erythematosus. Muscle biopsy (fig. 3) showed infiltration of the muscle and perivascular tissues with lymphocytes. Blood and pleural and pericardial fluids were sterile in culture. The protein pattern showed decreased albumin and increased alpha and gamma globulins. The patient's condition deteriorated during the first hospital week; his temperature persisted at levels of 102 and 103 F. He was given 200 mg. of cortisone in divided doses on the eighth hospital day, at the end of which time he was afebrile and subjectively much improved. He continued to receive 50 mg. of cortisone every four hours for the next three days. Cortisone dosage was then slowly decreased, and corticotropin was given in two 10 mg. doses daily for 10 days, at the end of which time cortisone therapy was stopped and corticotropin dosage was decreased by halves over two days and then discontinued. On the following day, the patient complained of pain in the left side of the chest and had a temperature range to 101.6 F. By the next day he was acutely ill, with a cough productive of bloody, mucoid sputum and with signs of pneumonia in the base of the left lung. Repeated smears and cultures of sputum yielded only Candida; L. E. cells were again found in sternal marrow. This illness did not respond to penicillin or erythromycin therapy, so that, after three days of fever, cortisone and corticotropin were given again. On the sixth day of this fever, when the cortisone dose was 600 mg. and the dose of corticotropin was 20 mg. daily, the temperature fell to normal and the pneumonia began to clear. Cortisone dosage was gradually decreased to 100 mg. daily and corticotropin was decreased to 10 mg. daily over the succeeding days, during which progressively fewer clinical and laboratory evidences of the patient's illness were found and his blood pressure rose from an average level of 147/103 mm. Hg to levels of 180/120 mm. Hg and above. Slight fever and severe night sweats recurred whenever attempts were made to decrease the hormone dosage, so that this treatment was continued.

Case 5.—A 36-year-old Negro woman (13th patient, table 1, *B*) had been satisfactorily treated with pyrogens over a six month period because of essential hypertension in the malignant phase. She was then maintained with 600 mg. of hydralazine daily for 17 months, with blood pressure at nearly normal levels. During the 13th month of this treatment, she noted pain and stiffness of her fingers and wrists; this was at first intermittent and responsive to acetylsalicylic acid but became progressively constant, irresponsive, and severer. During the four months that preceded her admission, she suffered severe recurrent upper respiratory tract distress that seemed to be infectious; she also observed an intermittent erythema and pruritus over the trunk. During the month before admission, she had cough, fever, and pleuritic pain and had lost 10 lb. (4.5 kg.) of weight. On admission, she seemed both acutely and chronically ill, with a temperature of 101.6 F, pulse rate of 124, respirations of 24, and blood pressure of 100/88 mm. Hg. The nasal mucosa was red and swollen, and patches of medium moist rales were scattered over both lung fields. The chest roentgenogram showed a diffuse, finely mottled infiltration of the lung parenchyma; there was no pleural fluid. Blood hemoglobin level was 7.8 gm. per 100 cc., white blood cell count 8,750 per cubic millimeter, serum polysaccharide 256 mg. per 100 cc., erythrocyte sedimentation rate 0.8 mm. per minute, and L. E. test (patient's plasma with dog marrow) positive. The Tiselius protein pattern (fig. 1) showed depression of albumin, with elevations of alpha and gamma globulins. Searches for a bacterial origin of this disease were ineffective. Tuberculosis was particularly suspected because the patient reputedly had had this disease at the age of 14; however, six sputum smears and cultures and five gastric washings were negative; also negative were tests for cold, Brucella, and typhoid agglutinins. There were no evidences of histoplasmosis or Q fever, and repeated blood cultures were sterile.

The patient remained miserably ill for seven days, with cough, pleurisy, and temperature range to 103 F. On the eighth hospital day, isoniazid was given in doses of 200 mg. daily. Over the next two weeks the temperature slowly fell, the symptoms, including pain in the joints, disappeared, and the pulmonary lesions cleared. Blood transfusions raised the blood hemoglobin level to 10 gm. per 100 cc., and the electrophoretic pattern of serum proteins was restored toward normal. The plasma L. E. test became negative. The woman was discharged in comparatively good health, on the 39th hospital day. When she was seen five weeks later, her blood pressure had risen to an average of 175/116 mm. Hg, she had regained her lost weight, the x-ray evidences of pulmonary disease had completely cleared, the blood hemoglobin level was 13.0 gm. per 100 cc., and the serum protein pattern was more nearly normal.

COMMENT

The data show that the use of relatively large doses of hydralazine for long periods of time by patients with essential hypertension elicits in some a syndrome, mild or severe, which variously simulates rheumatoid arthritis and acute systemic lupus erythematosus. The milder phase, characterized by joint and muscle distress, is associated with changes in plasma proteins that resemble those of the severe phase, which, in turn, resemble the changes found in systemic lupus erythematosus. The occurrence of fever in one patient, and of leukopenia in another with the milder rheumatic syndrome, probably represents transition into the severer phase of the illness.

The simulation of lupus erythematosus by the hydralazine syndrome is not complete. Thus, the plasma L. E. test was consistently negative in patients with the milder form of the disease, whereas it is usually positive in patients with acute systemic lupus erythematosus, who exhibit only the faint symptoms of that disease. Even in the severer phase, only one patient of five showed a positive plasma L. E. test and one other had L. E. cells and rosets in the bone marrow; both might have been expected to occur more uniformly in patients with acute systemic lupus erythematous of comparable clinical severity. In this connection, it is perhaps noteworthy that one patient, not reported on in this group, who was receiving treatment with hydralazine was found to have a positive plasma L. E. test, without any other signs or symptoms of the syndrome.

The distribution of the cases also differs from that of lupus erythematosus; four of the five patients were men, whose ages ranged from 38 to 60 years, and the other was a Negro woman. Another dissimilarity is the absence of increased proteinuria and cylindruria in the severe phase of the illness; such are common in lupus erythematosus, but, in our patients, the proteinuria and cylindruria attributable to nephrosclerosis tended to subside during the illness. Furthermore, the pneumonic processes experienced by two of the patients are not common in acute systemic lupus erythematosus; these seemed rather to resemble the pneumonia that occurs in rheumatic fever. The course of the illness is also different; remission occurred spontaneously in three of five patients with the severe form of the syndrome and in seven of eight with the rheumatic phase. The remission secured in two patients with severe disease by cortisone and corticotropin might be an aspect of similarity were it not that these drugs are similarly effective in a variety of mesenchymal diseases other than systemic lupus erythematosus.

In brief, hydralazine can, under appropriate conditions, elicit a state in the patient that simulates many aspects of acute systemic lupus erythematosus but that is evidently a distinct, although probably a related, process. The differences are sufficient to permit the conclusion that what has occurred is something other than an "unmasking" of latent systemic lupus erythematosus.

The precise classification of the syndrome induced by hydralazine, therefore, must remain uncertain. The most that can be said is that it falls within the group of varied diseases that Osler classified as the "erythema group." Periarteritis has been singled out of this group as a state that, in some instances, is attributable to hypersensitivity, and Rich [9] has suggested that others, notably lupus erythematosus and rheumatic fever, have a similar origin. The question thus arises as to whether the syndrome we describe is a manifestation of hypersensivity to hydralazine. Hypersensitivity is a tempting and facile explanation of any process that follows the use of a drug. Furthermore, hypersensitivity to penicillin sometimes elicits a positive L. E. test.[10]

The demonstration that this syndrome is a hypersensitivity to hydralazine is far from complete. It developed in patients without noteworthy evidences of an allergic diathesis; while some patients experienced recurrence of their symptoms on taking hydralazine after a symptom-free interval during which use of the drug had been discontinued, others did not, and some continued to take the drug, usually in smaller doses, without recurrence. In two patients the process continued after the use of the drug was stopped. These data suggest that hypersensitivity, as it is usually defined, does not account for the syndrome.

Rather, the syndrome develops in patients who have taken the drug for long periods and in doses large in comparison to those in common use. The severe form of the disease occurred only in patients who, after the milder phase of the syndrome had developed, persisted in taking the drug for weeks or months thereafter. These facts would be consistent with the view that hydralazine may in some way exhaust, impair, or change some aspect of tissue metabolism, in a purely quantitative way and by a mechanism quite distinct from that of hypersensitivity. Obviously, this is only opinion. An antigen may form from some of the hydralazine metabolite only when the dosage is such that the drug might saturate the tissues; alternatively, an antigen may form to which most persons are readily desensitized. Without evidence, it is futile to pursue this point; however, as we suggested above, a searching analysis of the mechanism that underlie this condition may bear on the pathogenesis of systemic lupus erythematosus.

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[9] Rich, A. R.: Hypersensitivity in Disease with Especial Reference to Periarteritis Nodosa, Rheumatic Fever, Disseminated Lupus Erythematosus and Rheumatoid Arthritis, Harvey Lect. (1946-1947) 42: 106, 1947.

[10] Walsh, J. R., and Zimmerman, H. J.: The Demonstration of the "L.E." Phenomenon in Patients with Penicillin Hypersensitivity, Blood 8: 65, 1953.

SUMMARY AND CONCLUSIONS

In 13 of 139 patients under prolonged treatment with hydralazine hydrochloride (Apresoline) in relatively large doses, a syndrome supervened, which, in its milder phase, resembled early rheumatoid arthritis and, in its severer form, simulated aspects of acute systemic lupus erythematosus. The process usually disappeared spontaneously on withdrawal of therapy with the drug or on reduction in dosage. The severe form of the illness was controlled with cortisone and corticotropin (ACTH) in two instances, and one of these patients continues to receive maintenance steroidal therapy. The mechanism of the syndrome is obscure. While it may represent a variant type of hypersensitivity state, the quantitative aspects of data are consistent with the view that it is a toxic response to the drug as such.

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MODE OF ACTION AND EFFECTS ON TISSUES OF LONG-ACTING LOCAL ANESTHETICS

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and
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The search for satisfactory long-lasting local anesthetics for nerve blocking continues. The advent of each new drug or preparation appears to be a step toward a goal that has not yet been attained. A recently introduced and apparently a prematurely acclaimed preparation known as Efocaine has aroused our interest. Efocaine contains procaine base (1%), butyl-*p*-aminobenzoate (Butesin) (5%), and procaine hydrochloride (0.25%) in a mixture of polyethylene glycol (2%), propylene glycol (78%), and water (20%). Butyl-*p*-aminobenzoate is insoluble in water (1 gm. dissolves in 7 liters of water at 20 C) but soluble in organic solvents. Contact with an aqueous medium causes the procaine base and butyl-*p*-aminobenzoate to precipitate. Presumably the drugs are slowly absorbed when injected perineurally, and a long-lasting anesthetic effect is obtained. The possibility of depositing crystalline substances in the tissues on contact with water and a subsequent foreign body reaction has not been emphasized. Some have reported success with this preparation.[1] In our experience the long-lasting effect was not always obtained. Pain and soreness at the site of injection have been the rule rather than the exception. Symptoms of local inflammatory reactions have been frequent after its use. Preliminary reports state that Efocaine causes no local damage to tissues.[1a] The intense pain experienced after injection raises the question as to whether or not these findings are correct. The following case report is typical of the effects we have noted in the majority of instances in which we have used the substance.

REPORT OF A CASE

A right stellate ganglion block was performed on a 55-year-old white man for causalgia in the right forearm. The anterior approach was employed. The block was performed first with 5 cc. of 2% lidocaine (Xylocaine). A Horner's syndrome appeared, indicating the block was successful. Then 4 cc. of Efocaine was injected slowly. No pain or burning were felt at this time. One and one-half hours later the Horner's syndrome had disappeared. The patient experienced some relief of his pain that day. The next morning he complained bitterly of soreness in the right supraclavicular fossa in the region of the seventh cervical vertebrae. Some edema was present over a localized area several centimeters in diameter. The area was tender to palpation but not fluctuant. The pain in the arm for which the block had been performed had returned but was overshadowed by that present at the *site of injection. There was no elevation of temperature. After* three days the soreness subsided but no relief was obtained from the pain in the arm.

We have employed the substance for caudal block in terminal cases of carcinoma of the cervix and bladder. The results were disappointing. Unfortunately, postmortem examinations were not done. Others have noted the local soreness we have described. Moore and his associates[2] have collected five cases at the Masonic Clinic in Seattle of transverse myelitis following paravertebral injection of the drug. Davis[3] has noted neuritis following its use for intercostal nerve blocking at the University of North Carolina. Stephen and his associates[4] at Duke University have noted the same local soreness we describe as well as neuritis. Personal communications from other clinicians too numerous to list here reporting similar experiences have come to our attention.

In view of these facts we felt that further investigation of the local effects of this preparation was in order and that a comparison of the effects with those caused by other currently available substances for long-lasting anesthesia would be desirable. Few data are available on the histological changes induced by most of the so-called long-lasting local anesthetics.

Some of the currently employed preparations for long-lasting anesthesia are oily solutions of local anesthetic drugs. Many contain phenol or benzyl alcohol in addition to the local anesthetic drug. Ample studies have been

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[1] (*a*) Weinberg, T.: Study of Effects of Efocaine upon Nerves, Muscle, Skin and Subcutaneous Tissue: Fougera Scientific Research Bull. no. 2, 1952. (*b*) Iason, A. H., and Shaftel, H. E.: New Approach to Problem of Postoperative Pain, Am. J. Surg. 83:549, 1952. (*c*) Ansbro, F. P., and others: Development of Efocaine: New Approach to Prolonged Local Anesthesia, Anesthesiology 13:306, 1952.

[2] Moore, D. C.: Personal communication to the authors.

[3] Davis, D. A.: Personal communication to the authors.

[4] Stephen, R. C.: Personal communication to the authors.

made of the effects of these solutions on tissue. Studies by most workers indicate that their effectiveness is due to a destruction rather than to functional alteration of the nerve fibers. Duncan and Jarvis [5] have found that the benzyl alcohol in these solutions, particularly when used in concentrations over 10%, is responsible for their effect. Nonoily substances commonly used include absolute alcohol, phenol (6% aqueous solution), ammonium sulfate, benzyl alcohol in water, and monobromosalicylic alcohol (Bromsalizol) in propylene glycol. Uniform comparative studies would not be superfluous.

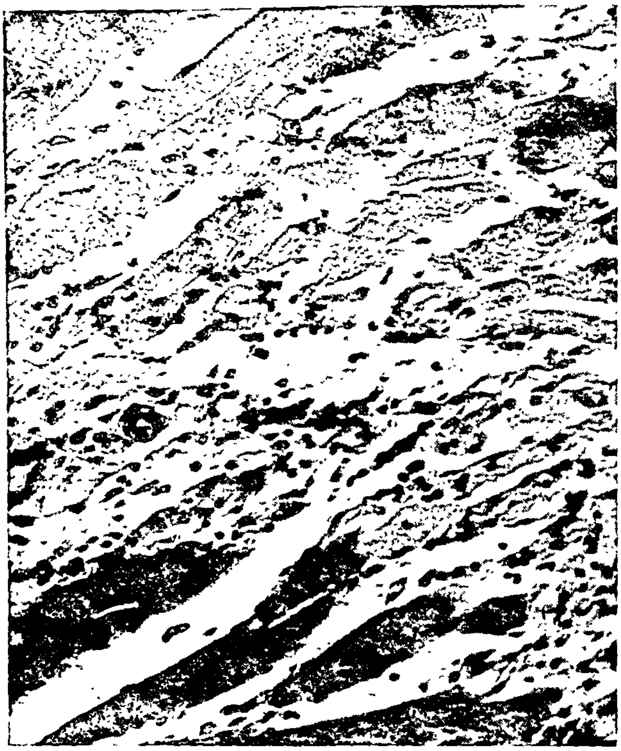

Fig. 1.—Degeneration and necrosis of the muscle 48 hours after injection of Efocaine.

The histological changes caused by intraneural alcohol injections have been described, but some disagreement exists between workers. Penman and Smith [6] report a complete destruction of nerves that persists for three and one-half months after injection. On the other hand Labat [7] reported no destruction after injection of 0.2 cc. of 95% alcohol intraneurally, even though total paralysis of the area supplied by the nerve was present. Mandl [8] reported necrosis of sympathetic ganglions 24 hours after injection of phenol, which was followed by regeneration after 75 days. Rabinovici [9] reported complete destruction of sympathetic ganglions by both phenol and procaine after intraganglionic injection. The results with phenol are as one would expect, but those due to procaine are surprising and questionable. Histological studies after the use of Dolamine (a mixture of ammonium sulfate, 0.75%, and benzyl alcohol, 0.75%) are not available. Data on the intraneural injection of aqueous solutions of procaine hydrochloride are also lacking. Minimal tissue changes after intramuscular and subcutaneous injections of procaine have been reported by deVincentiis and Meeker.[10] Vasodilatation, edema, and diapedesis of red blood cells were the commonest findings when a 1% solution of procaine hydrochloride combined with epinephrine was used.

MATERIALS AND METHODS OF STUDY

Obviously a study of this sort can only be done on animals. Rats three to six months old, weighing 200 to 300 gm., were used for most of the study. The animals were anesthetized with ether while the preparation being studied was injected. In order to note the effects on soft tissues, 0.1 to 0.2 cc. of each preparation or solution was injected into the muscle of the thigh or foreleg of the rat. Studies were also made by injecting the sciatic nerve perineurally, intraneurally, and both intraneurally and perineurally. For the perineural injection 0.10 cc. was used, and for the intraneural injection 0.05 cc. or less were used. The intraneural injections were made after exposure of the nerve by surgical dissection. A 27 gage ⅜ in. (0.96 cm.) needle was inserted at an acute angle to avoid trauma to the nerve. India ink was added to certain of the preparations to facilitate identification of the injected area for dissection. In all, 104 animals were used. When the effects on soft parts alone were studied, the forelegs were used. When both nerve and soft parts

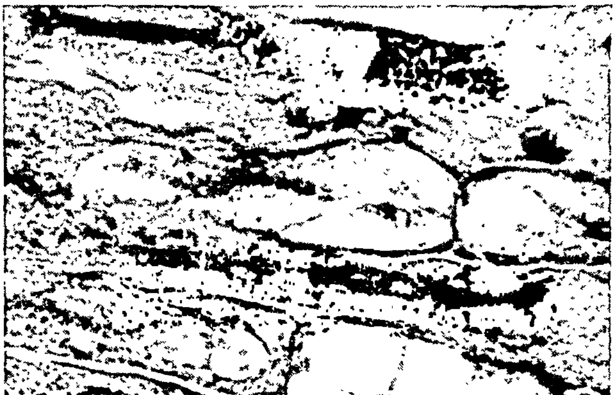

Fig. 2.—Coagulation necrosis of the nerve fibers 48 hours after injection of Efocaine into and around the nerve.

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[5] Duncan, D., and Jarvis, W. H.: Comparison of Action on Nerve Fibers of Certain Anesthetic Mixtures and Substances in Oil, Anesthesiology 4: 465, 1943.

[6] Penman, J., and Smith, M. D.: Degeneration of Primary and Secondary Sensory Neurones After Trigeminal Injection, J. Neurol., Neurosurg. & Psychiat. 13: 36, 1950.

[7] Labat, G.: Action of Alcohol on Living Nerve: Experimental and Clinical Considerations, Anesth. & Analg. 12: 190, 1933.

[8] Mandl, F.: Morphological Changes of Sympathetic Ganglia After Injection of Procaine or Phenol, Wien. med. Wchnschr. 100: 116, 1950.

[9] Rabinovici, N.: Anatomic Changes Produced by Novocaine and Phenol Infiltration in Sympathetic Ganglia, Surgery 31: 877, 1952.

[10] (a) deVincentiis, A.: Action of Local Anesthetics on Tissue, Rivista di chir. 5: 306, 1939. (b) Meeker, W. R.: Local Tissue Reactions, J. Lab. & Clin. Med. 11: 468, 474, 1926.

were studied, the thighs were used. Control studies were first made to note effects of isotonic sodium chloride solution and by introduction of the needle without any chemical agent. The animals were killed after 1, 2, 4, 7, 10, 14, 21, 30, and 68 days. None died from intercurrent infection; none had wound infections. Immediately after the animals were killed, the tissue was dissected and fixed in 5% formaldehyde (Formalin). The majority of the sections were stained with hematoxylin and eosin. Special pains were taken to obtain nerve sections as strictly longitudinal as possible. To rule out the possibility that the results were due to species differences, injections were made in a few dogs. The results were identical, so the studies in these animals were limited.

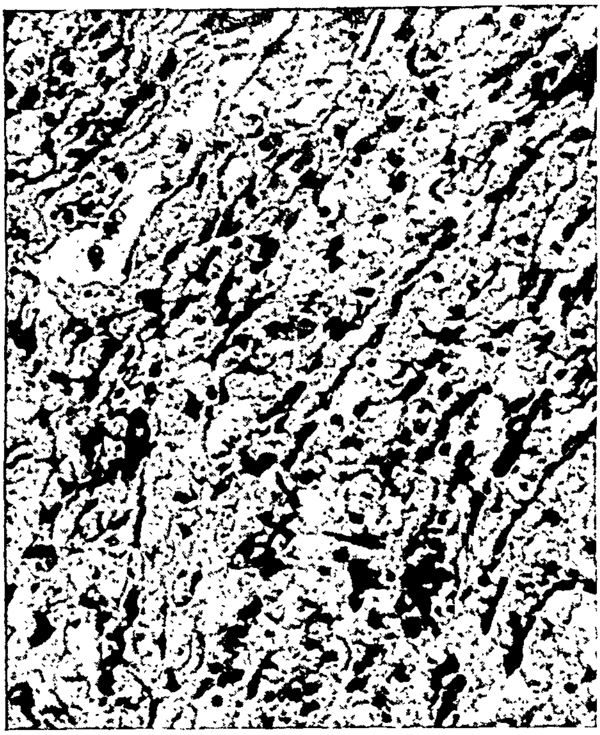

Fig. 3.—Extreme dissociation in the nerve fibers 11 days after intraneural injection of Efocaine.

RESULTS

Changes in Soft Parts.—Sections made two days after the intramuscular injection of 2% procaine hydrochloride showed no significant changes in perineural tissues and muscle. The ink was absorbed by phagocytes. Sections made a similar period after injection of Efocaine revealed degeneration and necrosis of the muscle bundle. There was a marked infiltration of lymphocytes and macrophages into the muscle (fig. 1). Sections made 10 days after intramuscular injection of Efocaine showed typical multinucleated regenerating muscle cells. Newly formed capillaries and fibroblasts were present that indicated an active regenerative process. By the 12th day most of the necrotic debris was removed, and regeneration was almost complete. Similar changes were caused by 6% phenol, alcohol, polyethylene glycol and propylene glycol mixtures, and polyethylene glycol (molecular weight 300). Muscle regeneration was present after seven days when phenol and alcohol were used. This was almost complete after 21 days. No degeneration or necrosis was observed in the muscle bundles of the controls after injection of isotonic sodium chloride solution, of 2% lidocaine, of Dolamine, or of 5% and 7% ammonium sulfate.

CHANGES IN THE NERVES

Two days after the intraneural injection of normal saline solution and India ink, no evidence of destruction was present even though considerable ink was present within the nerve. In contrast, after a similar period, perineural injection of Efocaine (fig. 2) caused coagulation necrosis of the nerve fibers. Bands of dead axis cylinders and an obvious absence of Schwann cells were noted, which indicates that no inflammatory or reparative process had yet occurred. The myelin sheaths had deteriorated into detritus, and nerve fibers had enormous vacuoles. Engorgement of the capillaries, diapedesis of red blood cells, and infiltration of lymphocytes were also noted.

Seven days after the perineural injection of Efocaine, vacuolization was pronounced and phagocytes and fibroblasts could be seen. The myelin appeared as globules that stained with eosin. The bands lost their prominence. Eleven days after the intraneural injection of Efocaine (fig. 3) extreme dissociation in the nerve fibers was noted. The neurilemma sheaths were empty, and a great increase of the number of Schwann cells was apparent. A coagulation necrosis of the fibers in the center of the nerve and infiltration of lymphocytes were noted. Between the 14th and 60th day, the neurilemma sheaths were prepared for the ingrowth of regenerating axis cylinders. Sixty-eight days after the intraneural injection of Efocaine (fig. 4), regeneration of axis cylinders was noted. Considerable detritus of myelin was still present as well as an increase of the number of Schwann cells. Both lymphocytes and phagocytes were scattered throughout.

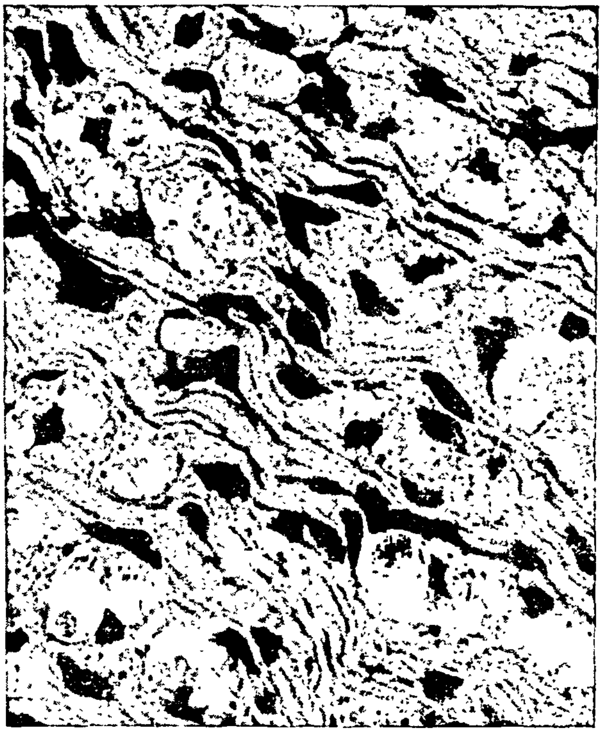

Fig. 4.—Regeneration of axis cylinders 68 days after intraneural injection of Efocaine.

The propylene glycol and polyethylene glycol mixture (solvent for Efocaine) alone, and mixed with 5% butyl-*p*-aminobenzoate, caused muscle and nerve changes identical to the changes caused by Efocaine. Polyethylene glycol (molecular weight 300) caused similar changes.

The nerve destruction caused by phenol was extreme. Twenty-four hours after intraneural injection, pronounced band formation was noted (fig. 5). Phagocytosis of the ink particles had not occurred as yet. The Schwann cells were absent. A coagulation necrosis was present with no signs of macrophages or lymphocytes. In a similar fashion intraneurally injected alcohol caused qualitatively the same changes as phenol, except that after 68 days there were no signs of axis cylinder regeneration.

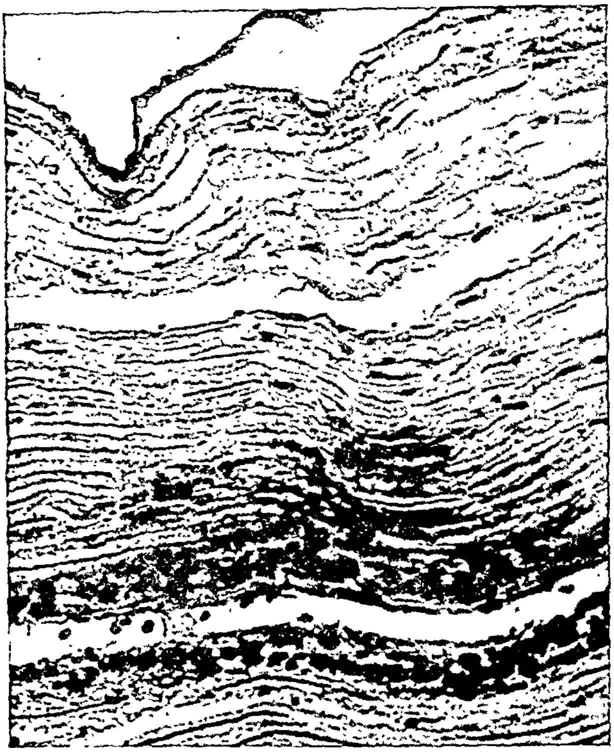

Fig. 5.—Pronounced band formation 24 hours after injection of 6% phenol.

In contrast the intraneural injection of 2% procaine hydrochloride and 2% lidocaine hydrochloride caused no notable changes in the nerves. Dolamine caused no changes. After seven days the nerve had a normal appearance. Solutions of ammonium sulfate in varying concentrations (1.75%, 3.5%, and 5.25%) caused no notable damage following intraneural injection.

Handling or stretching the nerve appeared to cause no damage. This confirms the findings of Denny-Brown and Doherty,[11] who reported that a nerve must be stretched 40% to 100% of its length for damage to occur.

COMMENT

It is difficult to correlate alterations in nerve function with morphological changes. The fact that function returns before regeneration is complete or that sensory changes may be obtained without any injury to nerves (as with ammonium sulfate) is not easily explained. One can only conclude that long-lasting local anesthetics, as in the case of the oily local anesthetic solutions, act by nerve destruction and that the changes induced are similar to those noted when a nerve is sectioned.

Degenerative changes in the nerves after these substances were injected are as intense and complete after 24 hours as those that occur 96 to 144 hours after nerve section. Gutmann and Holubar[12] were able to detect the onset of Wallerian degeneration by means of polarized light after 24 hours in sectioned nerve. The usual histological methods do not reveal changes before 40 hours, and by 60 hours only mild changes are noted. The characteristic changes are noted after 80 to 168 hours have elapsed. Swank[13] estimates the time for full development of Wallerian degeneration after nerve section to be six to seven days. It is noteworthy that, in the studies using phenol, alcohol, Efocaine, the polyethylene glycol, and the propylene glycol and polyethylene glycol mixture, the changes ordinarily requiring a week to appear after nerve section are fully developed within 24 hours. These findings are identical to those recorded by Holbrook and Pilcher[14] following the injection of calcium penicillin intraneurally.

SUMMARY AND CONCLUSIONS

Neuritis and local irritation have been noted following the clinical use of Efocaine, a recently introduced proprietary preparation for long-lasting anesthesia. Efocaine is a solution of procaine base (1%), butyl-*p*-aminobenzoate (Butesin) (5%), and procaine hydrochloride in a mixture of polyethylene glycol (2%) and propylene glycol (78%). The effects of various currently used long-lasting anesthetic substances injected intraneurally and perineurally on nerve and muscle tissue were studied histologically in experimental animals. Comparisons were made with results of injections of isotonic sodium chloride solution in controls. The saline solution caused no damage to either muscle or nerve tissue. Two per cent lidocaine hydrochloride (Xylocaine), 2% procaine hydrochloride, Dolamine (a mixture of ammonium sulfate, 0.75%, benzyl alcohol, 0.75%, and aqueous ammonium sulfate) caused no damage following intramuscular injection and transient changes on intraneural injection.

Efocaine, the vehicle used to prepare Efocaine, 5% butyl-*p*-aminobenzoate dissolved in the vehicle, polyethylene glycol (molecular weight 300), absolute ethyl alcohol, and 6% phenol destroyed both muscle and nerve tissues. After combined perineural and intraneural injection the changes are identical to those occurring after a nerve is sectioned but occur more rapidly. Regeneration of the nerves began at variable times but usually after 60 days after the use of all drugs studied except ethyl alcohol. Alcohol, phenol, Efocaine, and the vehicle in Efocaine cause anesthesia by nerve destruction rather than by blockade due to their anesthetic effects.

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DUPUYTREN'S DISEASE OF THE FOOT

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Fibromatosis of the palmar fascia, or Dupuytren's contracture, has been the subject of many exhaustive studies, and much has been written concerning its etiology, pathology, and treatment. In most of these studies, reference has been made to the fact that there is occasionally involvement of the plantar fascia by a similar process. Since the involvement of the plantar aponeurosis is rarely symptomatic, it has been considered relatively unimportant. Recently, however, in separate reports, Skoog,[1] Luck,[2] and Pickren and co-workers [3] have shown that the lesion in the foot is a distinct clinical entity, with characteristic gross and microscopic anatomy. They have demonstrated that the lesion occurs more frequently than is generally recognized and that important problems in differential diagnosis may arise unless this distinct clinical entity is well known. In this paper, the term disease is used instead of contracture because, in the foot, contractures are rare since extension of the fascia to the phalanges is either absent or insignificant.

CHARACTERISTICS

In the foot, the lesion is characterized by nodule formation, medially, near the highest point of the longitudinal arch (fig. 1). Contractures are rare. Involvement of the plantar aponeurosis may be present without involvement of the palmar aponeurosis, or the lesion may be limited to one foot. Microscopic study demonstrates that the nodules consist of masses of well-differentiated, proliferating fibrocytes. They arise within the plantar fascia and usually bulge toward the subcutaneous tissue but occasionally toward the deep structures of the foot. Such nodules may arise anywhere in the plantar aponeurosis. Because of the tissue changes discussed, the lesion has been called fibromatosis of the plantar fascia. It is unfortunate that, because of local recurrences of these very cellular fibrous tumors, they have been overdiagnosed and overtreated as fibrosarcoma. It is well established that this is a benign lesion that is adequately treated by resection of the entire plantar fascia.

We have recently treated six patients with fibromatosis of the plantar aponeurosis. It is felt that the need for a more widespread awareness of the problems of recognition, diagnosis, and treatment warrant a brief report of these cases. In addition, we would like to discuss further the histopathology.

REPORT OF CASES

Case 1.—A 72-year-old man was admitted to the hospital complaining of tender nodules in both feet. The nodule in the right foot had been present for 12 years and the one in the left foot for 8 years. For two years, he had noted the gradual development of a nodule in the right palm. The lesion in the palm was asymptomatic, but those in the feet were painful when bearing weight. Examination revealed early changes of fibromatosis in each hand and the characteristic tumor masses on the medial border of each foot (fig. 1). The entire left plantar fascia was excised through an incision extending from the first metatarsal head to the os calcis on the medial border of the foot. When the fascia was exposed, there were two nodules in the medial portion that bulged toward the subcutaneous tissue (fig. 2). The pathologist's report was as follows: "Section shows a portion of fascia with several adjoining focal areas of fibroblastic proliferation of the type seen in Dupuytren's contracture" (fig. 3).

The postoperative course was uneventful. The patient became ambulant with no pain in the left foot. At a later date, through a similar incision, the right plantar fascia was removed. The tumor mass on the right side was found arising within the plantar aponeurosis and bulged toward the deep structures of the foot. It was not encapsulated, and there was no evidence of infiltration of surrounding fat, muscles, nerves, or vessels. The pathologist's report stated: "The lesion noted on gross examination represents a cluster of several more or less discrete nodules that are invested and united by fibrohyaline connective tissue containing scattered dilated capillaries. The nodules proper are highly cellular and are composed of parallel bundles of closely packed fibroblasts of quite uniform morphology. The diagnosis is plantar fascia, Dupuytren's contracture." The wound healed, and the patient became ambulant with no complaints. One year later, there was no evidence of recurrence in either foot.

This patient's case illustrates the typical clinical picture and classic gross and microscopic appearance of symptomatic Dupuytren's disease in the foot. Since there was involvement of all four extremities, the clinical entity was easily recognized. It should be emphasized, however, that lesions were present in the feet long before there was recognizable disease in the hands.

Case 2.—A 26-year-old man was admitted to the hospital complaining of painful nodules on the plantar surface of the right foot. When he was 18 years old, soon after induction into the Army, he noted the development of such nodules in both feet. They were excised, but, because of recurrences, additional nodules were removed one year later. The disease was then diagnosed as multiple neurofibromas of the plantar surface of the feet. Five years later, one nodule was removed from the right foot for biopsy. The pathologist's report was as follows: "The section contains several pieces of dense fibrous connective tissue that have the appearance of fascia. Among the fibrous strands of the fascia, there is new formed dense connective tissue in which there are spindle-shaped parallel nuclei. There is no evidence of inflammation or malignancy. The histological picture is most like that of Dupuytren's contracture of the palmar fascia."

On another hospital admission, the same slides were reviewed by another pathologist who reported "dense fibrous tissue compatible with, but not pathognomonic of, neurofibromas." A consultant pathologist reported: "Cellular fascial fibroma (some call these low grade fibrosarcomas) in which local recurrences can surely be expected." On the basis of a clinical diagnosis of Dupuytren's disease of the foot, the entire left plantar fascia was excised. The pathologist's report was "recurrent fascial fibroma." Two years after the operation, the patient had no recurrences in the left foot and had no com-

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Reviewed in the Veterans Administration and published with the approval of the Chief Medical Director. The statements and conclusions published by the authors are the result of their own study and do not necessarily reflect the opinion or policy of the Veterans Administration.

Mr. Earl Bartlett, medical photographer at the Dearborn Veterans Hospital, took the photographs used to illustrate the paper.

1. Skoog, T.: Dupuytren's Contraction, with Special Reference to Etiology and Improved Surgical Treatment: Its Occurrence in Epileptics: Note on Knucklepads, Acta chir. scandinav. (supp. 139) **96**: 1-190, 1948.
2. Luck J. V.: Personal communication to the authors.
3. Pickren, J. W.; Smith, A. G.; Stevenson, T. W., Jr., and Stout, A. P.: Fibromatosis of the Plantar Fascia, Cancer **4**: 846-856, 1951.

plaints other than "numbness" caused by resection of the medial plantar nerve. On his last hospital admission, he complained of pain in the right foot and asked for the radical operation that gave relief in the left foot. The plantar fascia was exposed as in case 1. Multiple nodules were seen throughout the fascia, and the defect resulting from previous surgery was plainly visible. The remaining fascia was excised. The pathologist's report stated: "The hard mass noted on gross examination consists of a conglomeration of small nodules composed of whorled bundles of fusiform cells resembling fibroblasts. In the center of the nodule, these cells are closely packed and possess a very scant and somewhat poorly staining cytoplasm; toward the periphery, the connective tissue fibers become much courser, stain conspicuously with eosin, and appear partly hyalinized. This lesion is poorly delimited and appears to merge gradually with the adjoining fascia. The diagnosis is plantar fascia of the right foot, Dupuytren's contracture." The wound healed uneventfully, and he became ambulant and asymptomatic. He has since been lost to follow-up. His operations were performed in four different hospitals.

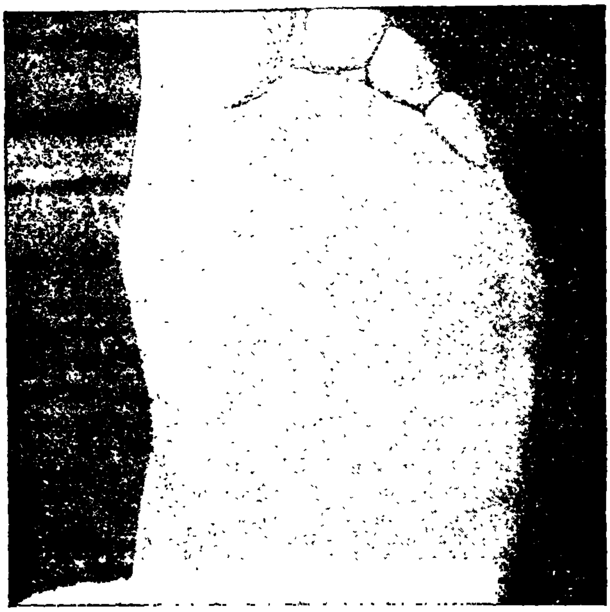

Fig. 1 (case 1).—The typical size and position of the tumor mass in Dupuytren's disease of the foot.

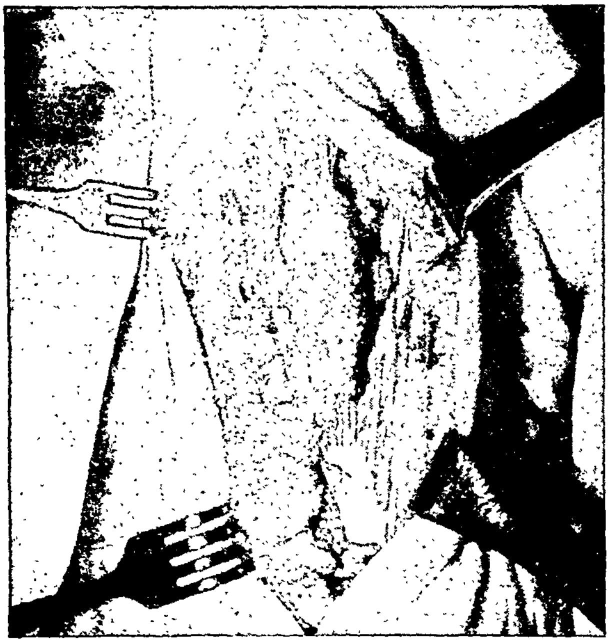

Fig. 2 (case 1).—The tumor nodules arising from the medial portion of the plantar fascia.

There was never any evidence of involvement of the palmar fascia. There was obviously much difference of opinion concerning the diagnosis. The impression of neurofibromatosis led several surgeons to the belief that surgical cure was not feasible. It is felt that calling these tumors recurrent fibromas or low-grade fibrosarcomas is both inaccurate and dangerous since it has resulted in unnecessary amputation. This patient's course illustrates that only complete excision of the plantar fascia prevents recurrence.

Case 3.—A 27-year-old white man was admitted to the hospital for treatment of a tender nodule on the medial aspect of the left foot. Two years earlier, he had fractured the left tibia. As part of his fracture treatment, the left leg was placed in a walking plaster. When the cast was removed, the patient noted a callus on the medial border of the foot. Soon the callus disappeared, but it was replaced by a gradually enlarging mass beneath the skin, which was painful when bearing weight. Four months after removal of the cast, the mass was excised through a small incision. The surgeon noted that it was a part of the plantar fascia and that its removal left a defect in the fascia. The pathologist's report was as follows: "The specimen consists of a hyperplastic scar rich in cells. This lesion should be completely excised." There was no evidence of disease in the other foot or in either palm. The patient was discharged for outpatient care and was readmitted nine months later for treatment of a recurrent mass.

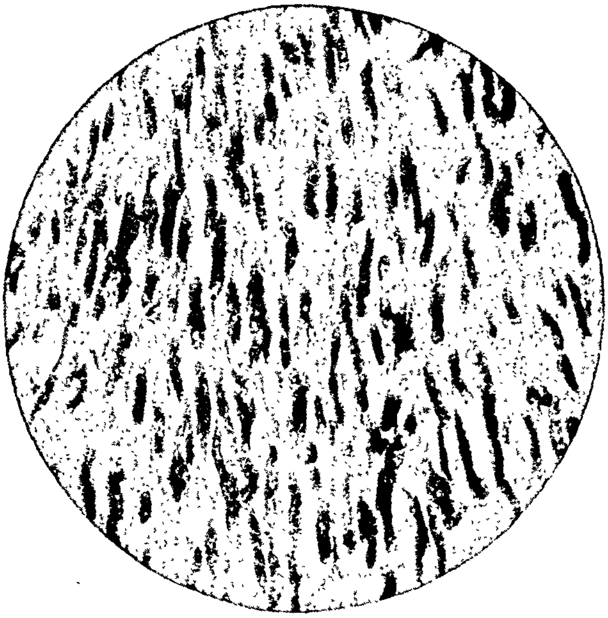

Fig. 3.—Microscopic section showing great cellularity at the center of a nodule in Dupuytren's disease (hematoxylin and eosin stain; × 370).

Because of the pathologist's previous report, the patient was presented to the hospital tumor board where there was considerable discussion concerning the nature of this lesion. It was felt by some that the lesion represented a recurrence of a very cellular tumor previously suspected of malignant potentialities and that it should, therefore, be treated as a malignant lesion. The board finally recommended wide excision of the mass. At the time of operation, a large recurrent nodule in the plantar fascia was found, and the entire plantar aponeurosis was excised. The pathologist's report said: "The sections are similar to those seen previously in that the tissue again has the appearance of reactive fibroblastic hyperplasia. In addition to the increased cellularity, there are several normal appearing mitoses. This is felt to be compatible with clinical diagnosis of Dupuytren's contracture." Convalescence was uneventful. Two years later, there was no evidence of recurrence.

It is felt that this patient had classic Dupuytren's disease in one foot, without involvement of the other extremities. We have seen one other patient in whom the disease developed after the use of a walking plaster. Luck states that he has seen it several times, and Ledderhose[4] reported 50 cases in 1897. The presence of the callus when the plaster was removed and the subsequent development of the mass immediately beneath the callus lend support to the thought that trauma in some instances precipitates the disease.

Finally, from the discussion concerning the diagnosis in this case, it is obvious that an unnecessary amputation might have been suggested as proper treatment. We have recently seen a patient in the tumor clinic for follow-up examination who has a classic recurrence of Dupuytren's disease in one foot. He had two previous operations at another institution and was advised that, if there was any recurrence, his leg should be amputated.

COMMENT

Recently, Pickren, Smith, Stevenson, and Stout reviewed the world literature and, with 16 additional cases, discussed this disease thoroughly. They prefer to designate it as fibromatosis of the plantar fascia. They emphasized that between the years 1927 and 1949, only seven cases were seen at the Presbyterian Hospital in New York and that two of those were treated by amputation. During that same period, nine other patients were sent to their laboratory. In five of these, the lesions had been diagnosed as potential or actual fibrosarcoma. Their review contains a comprehensive discussion of the clinical features, pathology, etiological factors, diagnostic problems, and method of treatment.

It is our belief that this disease is commoner than is generally recognized. This report is based on a study of six patients who had symptomatic involvement of the plantar fascia. It is felt that the significant features of the disease are adequately illustrated by the cases already discussed. Patients who had symptomatic palmar involvement with minimal asymptomatic plantar disease have not been considered. It appears very important to emphasize that, whatever the underlying cause may be, this disease may involve any one or all four of the extremities in various combinations. While the degree of involvement may vary, the clinical picture is characteristic. In the feet, contractures are rare because, as mentioned before, extension of the fascia to the phalanges is either absent or insignificant. Tumor formation is typical.

The term Dupuytren's disease has been retained because it is felt that it describes, for the clinician, a definite benign disease diagnosed on the basis of clinical and gross and microscopic pathological characteristics. Overtreatment is then unlikely. There are other reasons for designating this condition as Dupuytren's disease. There is as yet no agreement as to etiological factors. Pickren and associates discussed many factors, came to no conclusion, and, while remarking on the wide variety of causes suggested, stated that "while any one of these many bizarre associations of maladies with fibromatosis of the palmar and plantar fascia must seem due purely to chance, one pauses to wonder if they may not play the part of a trigger mechanism in individuals who have a congenital susceptibility."

In the present series of six patients, there is no common etiological factor apparent. Histological study of excised plantar fascia, however, reveals uniformly present changes that seem to indicate the mechanism by which any causative factor produces the fibrous tumor.

In previous studies, the tumor has been considered the important lesion. In discussing the pathogenesis of Dupuytren's contracture in the hand, Luck has stated that the nodule is the essential lesion. In discussing the microscopic appearance of the lesion in the foot, Pickren and associates stated that "the normal broad, acellular collagen bands of the plantar fascia terminated at nodules of young fibroblasts and interdigitated with other bundles of highly cellular new tissue." Skoog reported that these nodules arise in areas in which the normal collagen bundles are broken. He believes that nodules arise from perivascular connective tissue in response to such degeneration. He has demonstrated iron pigment in the areas of degeneration. He believes that in the foot, whatever other causes might be involved, the lesion is more prominent on the medial side at the highest point of the arch because mechanical strain produces the greatest degree of fiber rupture. Ledderhose also reported that this is a degenerative disease.

In our own material, we have never seen the formation of nodules in an area of normal plantar fascia. It is felt that, in the areas of nodule formation, the fibrillation, fragmentation, hyalinization, and changes in staining reaction of collagen fibers indicate degenerative disease of connective tissue and that nodule formation represents a reactive hyperplasia. The presence of increased numbers of thick-walled small vessels and focal collections of round cells is considered part of the host response to a degenerative process. If it is felt that the underlying disease is degeneration of the plantar fascia, reactive nodules may develop in many areas, and only complete excision of the plantar fascia will prevent recurrence.

It has frequently been stated that, in many cases, unusual trauma has appeared to precipitate the disease, yet, because it is difficult to demonstrate that trauma plays an important role in the majority of patients, it is usually held that the history of trauma is incidental. If it is believed that degenerative change precedes tumor formation, then it seems rational that unusual trauma to normal fascia might produce the necessary degenerative process and, therefore, be the important etiological factor. It is conceivable also that many agents might change the palmar or plantar fascia so that degenerative change follows what is considered normal use. On the basis of the evidence available, one does not seem justified in excluding trauma as a cause of Dupuytren's disease or fibromatosis of the plantar fascia.

SUMMARY AND CONCLUSIONS

Fibromatosis of the plantar fascia or Dupuytren's disease is a distinct clinical entity that occurs more frequently than is generally recognized. It is suggested that the disease is a reactive fibrous hyperplasia following degenerative disease of the plantar fascia.

Unless the lesion is recognized as a clinical entity, benign in nature, the histological features associated with recurrences may suggest malignant disease and result in overtreatment. Only complete excision of the plantar fascia will prevent recurrence.

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LONG-TERM RESULTS IN CORTICOTROPIN-TREATED ULCERATIVE COLITIS

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The use of corticotropin in the treatment of idiopathic ulcerative colitis was first reported in 1950.[1] Since that time a number of investigators have observed a favorable immediate response to this form of therapy, particularly when the disease was of the acute fulminating variety and of short duration.[2] Our experience with the initial response of ulcerative colitis to corticotropin has been previously reported and corresponds closely to that of others.[3] In the majority of patients a prompt defervescence, reduced number of liquid stools, better appetite, weight gain, correction of anemia, and greater emotional stability followed when this hormone was added to the usual supportive measures. An improvement in the proctoscopic and roentgen appearance of the colon regularly showed a lag in comparison to symptomatic improvement. The original group of patients now have all been followed for over two years. The course of these and additional patients who have had prolonged observation following corticotropin therapy forms the basis of this report.

METHOD OF STUDY

We have now administered corticotropin to 40 patients with ulcerative colitis; 26 were men, 14 women. Nineteen were in the third decade, eight in the fourth, six in the fifth, three in the sixth, and four in the seventh. Seven patients were classified as acutely ill, 18 as severely ill, 14 as moderately, and 1 as mildly ill. Only five were having their first attack of ulcerative colitis; one had a history of the disease for 25 years and the rest for 3 to 10 years. Significant relapse had occurred in the majority every one to two years. All patients except one were treated in the hospital, and when the history was taken particular attention was paid to any facts suggesting previous or existing tuberculosis, diabetes, or peptic ulcer. Routinely a blood cell count, urinalysis, blood Wassermann test, blood sugar, stool and proctoscopic examination, and gastrointestinal and chest roentgen-ray study was performed.

Both the Armour[4] and Wilson preparations of adrenocorticotropin hormone were employed. Initially 20 mg. (Wilson) or 25 mg. (Armour) of corticotropin was administered intramuscularly every six hours until some clinical effect was demonstrable, which usually occurred during the first week. The dose was then gradually reduced according to the patients' response during two additional weeks. In many of the patients with mild or moderate disease only 20 mg. every 12 hours was sufficient to produce clinical improvement in approximately one week and permit reduced amounts to be given during the second and third weeks. When the corticotropin was given intravenously, according to the technique of Gordon, Kelsey, and Meyer,[5] 20 mg. was given in 500 cc. of 5% dextrose in water continuously for eight hours daily for one to two weeks. During the third week a reduced amount of the hormone was given intravenously or a tapering off dose intramuscularly according to the clinical response. We now prefer this dosage and method of administration to all others and have given it to half our patients originally and to all with delayed response. One patient had a satisfactory response with 10 mg. given intravenously daily for 10 days. Eosinophil counts were used originally to determine when the corticotropin was having an eosinopenic effect, but we observed that clinical response would frequently occur when the dose of corticotropin was too small to cause a fall in the eosinophil count. We therefore discontinued this test as a routine procedure and utilized the clinical response as the guide to dosage. In the majority the most effective dosage appeared to be 20 mg. given as a slow intravenous drip over an eight hour period daily, continued until a clinical response was manifested by a fall in fever, reduced stools, improved appetite, and increased sense of well-being. Whether given intravenously or intramuscularly, corticotropin therapy was rarely continued longer than three weeks.

In addition to hormone therapy all patients received the supportive measures ordinarily used in the treatment of ulcerative colitis. These included bed rest, sedatives, parenterally administered fluids, whole blood transfusions, antibiotics, and a high caloric, high protein diet. To maintain electrolyte and mineral balance, potassium chloride, 2.0 gm., and dicalcium phosphate, 2.0 to 4.0 gm., were administered orally each day. Testosterone propionate, 25 mg. intramuscularly daily, was given for its anabolic effect to three severely ill male patients for 10 to 14 days.

RESULTS

Of the 40 patients treated, 15 have been followed over two and one-half years, 10 over two years, 10 over one and one-half years, and 5 less than one year. The response

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Read before the Section on Gastroenterology and Proctology at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

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[3] Wirts, C. W., and Carroll, J. L.: The Use of ACTH in Treatment of Ulcerative Colitis, Rev. Gastroenterol. **19**: 13, 1952.

[4] Some of the corticotropin (Armour) was supplied through Harley E. Claxton, M.D., director of medical research, the Armour Laboratories, Chicago.

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to the initial course of therapy under our supervision was classified as excellent in 8, good in 14, fair in 6, and poor in 2. The type of response did not correspond to the severity of the illness. Of the two patients showing a poor response, one was a 53-year-old man who had chronic disease of 25 years' standing and the other was a 19-year-old youth who was experiencing his first attack of ulcerative colitis, which was of the severe, fulminating variety. The patients who had a fair response, for the most part, had protracted, low-grade disease, and those in whom an excellent or good response occurred were noted to have widely spaced, severe exacerbations with periods of complete remission between.

Protoscopic study of patients in relapse revealed changes similar to those of the initial attack. Improvement in the colon frequently developed much more slowly than the subjective symptoms. A pronounced reduction in congestion, edema, and friability was usually not demonstrable until the second week of therapy and in some patients was delayed until the third or fourth week. Granularity seldom diminished; pseudopolyps were observed to decrease in size but not to disappear completely. Roentgenographic changes observed in the colon rarely showed much improvement and in the severely ill patient were at times progressive even though symptoms were in remission.

EARLY RELAPSE

Relapse following a course of hormone therapy has occurred in 16 of the 40 patients up to the present. In four this occurred early, within one to six weeks. In one of these patients this took place three times in fairly rapid succession; in the other three it occurred twice. Retreatment induced prompt remission of these relapses in all four patients, but it was maintained for a substantial period in only two; in one, continuous treatment with small doses of corticotropin was required, and in the fourth corticotropin therapy had to be discontinued because of the development of a severe acneform rash of the face and chest. The history of three of these patients follows.

Case 1.—A 53-year-old pharmacist was admitted in a comatose state with a blood urea nitrogen of 110 mg. per 100 cc. He had had chronic recurrent diarrhea for 25 years and immediately prior to admission had been having 10 to 20 loose, watery stools per day. After correction of his electrolyte imbalance he was treated with cortisone, 50 mg. every 12 hours for two nonconsecutive two week periods, but an electrolyte imbalance gradually developed with hypokalemia and hypocalcemia. Cortisone therapy was therefore discontinued and symptomatic care administered. Three weeks after convalescence at home a severe exacerbation of diarrhea followed a period of great emotional stress. Anorexia, weight loss, and weakness soon developed. Because of financial difficulties the patient refused to reenter the hospital. Therefore, self-administered corticotropin, 25 mg. every six hours for two weeks and every 12 hours for one week, was prescribed, together with potassium chloride, 2.0 gm., and dicalcium phosphate, 4.0 gm. daily. This brought about a prompt improvement in appetite, weight, strength, and emotional outlook that persisted for about three weeks when an exacerbation of diarrhea followed a mild head cold. With the persistence of diarrhea the patient began to do poorly, and it was decided to repeat the course of corticotropin. This was again followed by remission, but, when corticotropin was completely withdrawn on this occasion, there was a gradual increase in stool frequency, anorexia, weight loss, and weakness. This finally became incapacitating and was only relieved by small doses (20 mg.) of corticotropin daily. Several attempts to withdraw the hormone completely, substituting distilled water injections or cortisone by mouth, all failed to keep this patient symptom-free. With only a few weeks' interruption he has used 20 mg. of corticotropin daily for 26 months. With this dosage he maintains his weight, feels well, and is able to work regularly, and his only symptom is occasional bouts of loose stools. Fasting blood sugar levels and urinalysis are normal. Repeat barium enema roentgen study at six month intervals has shown a gradual progression in contraction and loss of haustral marking of the colon and the development of inflammatory changes in the terminal ileum.

Case 2.—A 19-year-old white youth noted occasional blood in bowel movements three months before admission. There were four to five loose stools daily containing mucus, pus, and blood, at the time of entering the hospital. Proctoscopy and barium enema roentgen study showed idiopathic ulcerative colitis involving the entire colon. The patient was inadvertently given for one week 40 mg. of corticotropin in 500 cc. of 5% dextrose in water intravenously over an eight hour period daily, instead of the 20 mg. we usually employ. During this week temperature of 103 to 104 F, severe bloody diarrhea with clots, and extreme abdominal pain and anorexia developed. The corticotropin therapy was therefore discontinued and supportive measures employed for another six weeks. During this time abdominal pain was so severe that perforation of the bowel was suspected several times. Surgical and medical consultants thought this patient should have ileostomy, but neither the patient nor his family would agree. He gradually improved sufficiently to go home, but two weeks later three subcutaneous abscesses developed, one on the thigh and one behind each ear that required incision, drainage, and antibiotics. This complication aggravated the diarrhea and the anorexia so much that the patient was readmitted. Corticotropin, 20 mg. every 12 hours, was given intramuscularly with a prompt decrease in fever and improvement in appetite and emotional state. The patient gained 8 lb. (3.6 kg.) in one week, but rather severe acne developed on the face and chest. Corticotropin therapy was discontinued, and the patient returned home, but diarrhea, abdominal pain, and anorexia recurred immediately. Cortisone, 25 mg. every 12 hours orally, was tried but seemed to aggravate the condition. This patient has had to be treated symptomatically since; his progress has been slow and complete remission has not been obtained to the present.

Case 3.—A 24-year-old white man first noted bright red blood in his stool while in military service in Germany. After discharge and reenlistment abdominal cramps, loose or watery bloody stools, and weakness developed. Stool examination was reported to show trophozoites of Endameba histolytica. This led to intensive treatment with aureomycin and amebicides for about one month. During this time high fever, severe diarrhea, anorexia, weight loss, and anemia developed. Repeat proctoscopy indicated that these symptoms were secondary to ulcerative colitis and corticotropin, 20 mg. every six hours, was given intramuscularly for 14 days, with a gradually reduced dose over a period of eight weeks. As the dose was reduced to minimal levels and finally stopped, appetite and emotions became depressed, and stools increased. Retreatment with corticotropin was then instituted, and 20 mg. of corticotropin in 500 cc. of 5% dextrose in water given intravenously over an eight hour period daily was followed by prompt improvement. Treatment was continued for three weeks, and remission was sustained for 18 months.

LATE RELAPSE

Twelve patients suffered delayed relapses occurring 12 to 18 months after the initial hormone therapy. These were severe exacerbations usually associated with great emotional stress or upper respiratory infection. Retreatment of these patients with corticotropin brought about improvement, but in five this was less prompt and less complete than that obtained initially. They received corticotropin intravenously for one to three weeks, and symptomatic treatment was continued in those who failed to respond completely. If symptoms persisted in spite of corticotropin therapy and supportive measures, cortisone, 25 mg. every 12 hours for one to three weeks, was given. This proved quite helpful in four of the five patients with refractory cases. One patient's condition was made worse by it. The following three cases are examples of delayed relapse showing different types of response to retreatment. The first case shows delayed relapse with satisfactory response.

CASE 4.—A 23-year-old white laborer had the first attack of acute fulminating ulcerative colitis 14 months previously that had been treated with corticotropin. There was complete remission in about 18 days. One month later he returned to hard labor, gained weight, and felt well. Relapse 14 months after the initial corticotropin therapy was preceded by a severe head cold, which was followed in three days by diarrhea of 5 to 10 liquid bloody bowel movements per day, anorexia, weakness, weight loss, and fever. Proctoscopy and roentgen study of the colon showed somewhat more advanced changes than had been observed the preceding year. Retreatment included 20 mg. of corticotropin intravenously daily for three weeks, bed rest, sedatives, transfusions, high caloric, high protein diet, and vitamins. Improvement occurred, but stools were still frequent and loose and appetite only fair at end of three weeks treatment. Corticotropin therapy was discontinued, and supportive measures alone were employed for 10 days. During this period a pronounced improvement in appetite, emotional state, and bowel function took place. This patient returned to heavy outdoor labor two weeks after discharge and has remained asymptomatic for four months.

The second case shows delayed relapse with unsatisfactory response to retreatment with corticotropin but subsequent improvement following cortisone therapy.

CASE 5.—A 23-year-old white clerk had ulcerative colitis for about three and one-half years. She had responded well to the first course of corticotropin therapy 20 months previously and had gained 35 lb. (15.9 kg.). After contracting a head cold, bloody diarrhea, fever, and abdominal pain developed, and she became very anxious. Admission to the hospital and three weeks of intravenous corticotropin therapy improved the outlook and appetite moderately. The temperature gradually fell to normal, but she continued to have four to five liquid to soft stools daily without gross blood. This response was much slower in developing and less complete than the one 20 months previously, nevertheless corticotropin therapy was discontinued. This patient was enthusiastic about her improved state while taking cortisone, and the drug was therefore given for three weeks and then stopped, even though the patient was reluctant to give it up. She has continued well up to the present, two months after all medication was withdrawn.

The third case shows delayed relapse, with unsatisfactory response to corticotropin as well as to cortisone.

A 61-year-old white woman had bowel dysfunction for four years, but it was diagnosed as ulcerative colitis only 13 months ago. Corticotropin was first administered at that time for three weeks. Response was excellent, with pain relief, return of normal bowel function, and improved appetite and emotional state. After remaining asymptomatic for one year, this patient contracted a severe upper respiratory infection and diarrhea developed, with 10 to 15 stools per day containing large amounts of mucus, pus, and blood. Proctoscopy and roentgen study revealed a progression of the old disease process in the colon. A repeat course of intravenous corticotropin therapy over a three week period produced some improvement in appetite and in reducing anxiety, but the stool and proctoscopic appearance of the rectum remained unchanged. The patient was discharged after three weeks' treatment for further convalescence at home. Her response was only fair, and she complained of considerable depression. Cortisone, 25 mg. every 12 hours, was then given for one week, but without benefit. Instead, anxiety developed to such a degree that the patient was afraid to remain at home alone because she contemplated suicide. She became emotionally stable when the cortisone was withdrawn.

COMMENT

The etiology of ulcerative colitis remains unknown, although infection, hypoprotinemia, allergy, hypermotility of the bowel, enzyme disturbance, and psychoneurosis are looked on as contributing factors. None of these theoretical factors, however, has been established, and consequently treatment remains empirical. Medically this consists of supportive measures such as bed rest, sedatives, a highly nutritious diet, parenterally administered fluids, blood transfusions, antibiotics, vaccines, vitamin supplements, and psychotherapy. Complications and intractability are usually considered indications for surgical intervention, which consists, preferably, of ileostomy and total colectomy. Since this is actually a systemic disease, at times showing widespread involvement of almost any system of the body, it is not surprising that nonspecific medical and surgical treatment[6] often fails to bring about complete cure, and a continued search for improved treatment is essential. Corticotropin has been shown to have a beneficial effect in a number of diseases of obscure origin in which widespread inflammatory reaction, polyarthritis, iritis, and involvement of mesenchymal tissue may be present.[7] The existence of some or all of these features in patients with ulcerative colitis led to the trial of corticotropin therapy in this disease. A number of investigators have now reported a favorable response, particularly in the acute fulminating form of colitis of short duration, but the mechanism whereby corticotropin produces this response is unknown. It has been suggested that the stimulating effect of corticotropin in the adrenal cortex produces cortisone-like steroids that inhibit the oversensitivity of mesenchymal tissue.[8] Whether such a reaction accounts for the reduction of the intense inflammatory bowel changes seen proctoscopically in these patients is still speculative. Alterations in enzyme systems, tissue permeability, and the mechanisms involving hyaluronidase may be postulated, but supporting evidence is not yet available. Among the many known effects of corticosteroids that might play a significant role in ulcerative colitis is an increase in gluconeogenesis with a sparing of carbohydrate to the body and the increased absorption and storage of fat.[8] On the other hand, there is an increased loss of nitrogen through the kidneys, and although fecal nitrogen loss is reduced the patient remains in negative nitrogen balance during corticotropin therapy.[9] It cannot be stated exactly how corticotropin works in ulcerative colitis, but clinical observation following its use shows in the majority of patients a sharp decline in fever, a reduction in the number of fluid bowel movements, improved appetite, gain in weight, correction of anemia, and a greatly improved emotional outlook.

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All our patients except one were treated in the hospital and have received, both initially and for relapses, corticotropin either intravenously or intramuscularly or both in gradually reduced dosage for a total treatment period of three weeks. In the early relapses retreatment with corticotropin brought about a response equally favorable to the initial one, but in 12 patients with delayed recurrences retreatment produced a slower and less effective response. We have preferred the use of corticotropin to cortisone both for initial treatment and for recurrence, but in five patients, whose response to corticotropin therapy was inadequate, cortisone was administered, 25 mg. orally twice daily for a period of one to three weeks. Four patients indicated that they felt stronger and had improved appetite and fewer stools; the fifth did not appear to be benefited. None of the patients in the entire group have had surgical treatment, and all but one have returned to their occupations. In the latter case surgery has been recommended, but neither the patient nor his family has been willing to accept it. At present he is ambulatory but still in a weakened condition.

We have observed no serious untoward reaction to the use of corticotropin, although acne occurred in one patient, moderate rounding of the face in three, and slight ankle edema in two. One patient showed considerable depression and anxiety after a course of corticotropin and cortisone therapy. All of these symptoms were relieved when hormone therapy was discontinued. The infrequency and mildness of side-reactions or complications in this group of patients is probably due to the small doses of corticotropin and the short period of administration, which rarely exceeded three weeks.

CONCLUSIONS

On the basis of our experience we consider corticotropin to be an effective therapeutic adjunct in the treatment of ulcerative colitis. It brings about changes similar to spontaneous remission but produces them more rapidly. It is not a cure, as is evidenced by the progress of the disease and the fact that relapse has occurred in approximately half of the treated patients and may still occur in the remainder. Early relapse is amenable to retreatment with corticotropin, but, when the relapse is delayed, response is less prompt and somewhat less complete. In the latter instances the addition of cortisone has been helpful.

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MEDICAL TECHNOLOGY AND ITS RELATION TO PHYSIOLOGY AND PATHOLOGY

CHAIRMAN'S ADDRESS

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In approaching a subject so vast it is tempting to spend more time than would be appropriate on the beginnings of the techniques, methods, and apparatus that form the tools of medical technology and how these tools and the ideas from which they came and to which they have led have influenced not only physiology and pathology but every other aspect of medicine, as well as our entire social and economic structure. It is also a temptation to discuss in greater detail than opportunity permits all the intimate relationships between medical technology in its broadest sense and physiology and pathology, two of the great fundamental divisions of medicine that utilize technical procedures more than any other. However, the scope of such a discussion would be so vast that it is necessary to limit it to a few of the most timely aspects.

If time permitted it would be easy to show that medical technology bears the same intimate relationship to physiology that it bears to pathology, or in fact to any other of the medical sciences. It is obvious that the same techniques must be utilized, whether the functions and processes of the organism are being studied and measured or the effects of disease on those same functions and processes observed.

The history of modern medicine is replete with milestones of technical progress, such as the development of the microscope, the discovery of the roentgen ray, and the identification of bacteria. Each of these technical milestones carries with it implications of many other techniques. Lowenhoek's little single lens microscope was the first anticipatory step toward our vast modern array of microscopes and microscopic techniques, not to mention an even vaster array of the uses of optics of all kinds and of the technical advances that they have made possible. The discovery of the bacterial origin of disease by Pasteur gave birth to a perfectly staggering array of technical methods and apparatus that have found their way into every corner of medical science and have transformed civilization beyond the wildest dreams of the little French chemist who started it all.

In contemplating such facts as these, it is often impossible to say whether this or that discovery has had more impact on the development of physiology or pathology. Also there is a constant flow back and forth between the techniques and concepts of disease and health.

Nor is it necessary to go back into the history of medicine to be confused, for it is often impossible to define the limits of what might be considered a physiological state so definitely that it is possible to say whether at another time or place it might not be considered evidence of disease. As an example, observations have been accumulating on the effects of the changes in intestinal flora produced by the antibiotics. These findings will lead to new concepts of the functions of the normal intestinal flora in health as well as in disease.

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It is sometimes true that methods that may be developed for use in normal states may need modifications when applied to pathological states. In general, however, this is not so, and medical technology, practically speaking, deals in the same scientific terms and uses the same tools and techniques in studying normal physiological processes or the variations of those processes under the influence of pathological conditions. For these reasons it has seemed proper to discuss a few problems and responsibilities in medical technology in relation to both physiology and pathology.

METHODOLOGY

In the research laboratories of both pathology and physiology, new and often extremely complex methods are constantly being developed, and it is on the basis of these new findings that medical progress depends to a considerable degree. Oftener than not, these methods and the results they produce never reach the routine practical level, but have their use as stepping stones in the elaboration of further research and ultimately to the final state that is the objective of all medical sciences. That is the treatment of the sick and the preservation of good health in the well.

Occasionally, out of the research laboratory comes a test or a method of measurement or some other technical procedure that can be used in the day-by-day study of patients, and here a grave responsibility rests. Before any such procedure is adopted as a routine method, it must be carefully scrutinized to be sure that it is as useful as possible before it is transferred to the clinical laboratory.

To fulfill its best functions as a practical routine method, a technique must be as simple as possible, it must employ as little and as simple apparatus as is consistent with required accuracy, and it must take as little time as possible in its performance. Now the critical judgment that is necessary to decide each of these points of requirement implies a broad knowledge of what is being measured by the method, and what the normal variations are, not only variations in what is being measured but also those variations that are inherent in the method itself. Such details are as much parts of a technique as the measurements of the reagents or the standardization of the apparatus. Yet it is surprising how seldom this information is included in the description of a technical procedure.

TOOLS OF MEDICAL TECHNOLOGY

The same general principles are equally applicable to the development of new apparatus employed in research. In the development of such mechanisms we are greatly benefited by our mutual association with research engineers and instrument designers and manufacturers, but it is the responsibility of our professions to see that, as far as we are able, every care is taken to be assured that apparatus that is to be used for clinical work is as well adapted to this sometimes modified use as is possible. Further, when such apparatus is translated from the research to the clinical laboratories, new sets of standards of control and variability must be set up.

These considerations unfortunately have been overlooked in many of the medical laboratory methods that have been used, often for many years. A reevaluation of some of these has already been made and others are under study, and it is very probable that the results of these studies will prompt a still more searching reevaluation of many of our common techniques. Such a study has been reported by Henry and associates,[1] in which the authors evaluate the effect of the errors introduced in several common chemical determinations by the simple procedure of pipetting. Such studies as this are as necessary as research into newer methods, and all new methods should be carefully submitted to such controls before being adopted for routine use.

A notable example of the failure of a medical laboratory technique to meet critical requirements is that found in one of the commonest, and often called "one of the simplest," techniques in the medical laboratory—the blood cell count. The method of counting blood cells has been changed in only minor ways since it was first described, and until quite recently the description of the method almost always contained the statement that the beginner should continue to make repeated counts on the same blood until successive counts could be made to agree within about 200,000 cells. In 1935 Berkson, Magath, and Hurn showed that such a standard of performance was impossible of accomplishment, and for the first time defined the normal variability of the total blood cell count as made with the hemocytometer.[2]

Another error that remained undetected for many years is the recently discovered error of 1 gm. of hemoglobin per milliliter of blood in the standardization of the British Haldane hemoglobinometer.[3] This explains for the first time why the "normal" English values for hemoglobin were always below those observed elsewhere.

Such an individual error, however, is only part of the far reaching and complex considerations that are inherent in even what is usually considered one of the simplest laboratory tests. A complete review of clinical hemoglobinometry by MacFate, MacFadyen, Stevenson, Copeland, and Sunderman will soon be published.[4] This review will reevaluate the whole subject. Such reviews as this are the best evidence of the intimate relationships that exist between the technical procedures used in the study of health and those used in disease. When these two examples among the very common laboratory methods are considered, it should add force and urgency to the necessity for control over all techniques, both old and new.

A number of years ago the American Society of Clinical Pathologists in cooperation with the United States Public Health Service undertook a national survey of the serologic testing for syphilis.[5] The findings of this survey were a shock to all concerned, but out of this study has come a new day in the use of serologic methods and a new concept of the establishment of controls over laboratory practice by such surveys. Similar surveys in other branches of laboratory techniques are now being used by state and national groups in an effort to further improve the standards of practice of medical technology.

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In 1947 Belk and Sunderman made a survey in Pennsylvania at the request of the Committee on Laboratories of the Medical Society of the State of Pennsylvania, and reported surprisingly low standards in a number of common clinical chemical analyses.[6] Out of this study have come others, and many clinical laboratories now conduct continual controls over their routine work by means of services that provide standard solutions of several kinds. Recently Sunderman stated that, according to his continued observations, there is evidence that the standards of performance are showing a definite improvement over a wide area of the country.[7]

SEMANTICS OF MEDICAL TECHNOLOGY

Everyone who has attempted to write or read a description of a technical method is aware of the great difficulties encountered in clear expression of even very simple procedures. It is remarkable, in spite of this common and obvious hazard, that the written transmission of such information is as effective as it is. On the other hand, the literature is unfortunately filled with inadequate and often inaccurate descriptions of techniques that might otherwise be very useful and that may well be a danger in their published condition.

A few years ago a student of medical semantics selected a series of articles in which numerical values were used in attempts to prove certain medical scientific statements. When examined by suitable mathematical means, one-third of the papers were found to affirm the exact opposite of the facts that were supported by the measurements contained in the paper. Another third contained figures that were inconclusive, while only one-third had agreement between the numerical values and the conclusions of the authors.

A recent article on the "Role of Cybernetics in Physiology" by Cohn and Cohn [8] urges the importance of more effective communications in physiology and the profound importance of adequate controls that are inherent in such communications. The authors urge the necessity for the translation of the knowledge of one field into the terms and understandable modalities of related fields of knowledge. They further suggest that, as the breadth and complexities of sciences increase, there must be developed some more effective means than we now have of making the fundamentals of one field available and understandable to others. This is certainly pertinent to the present subject, for no matter how well conducted the techniques of research, and how carefully measured the values of the physiological state, they will have less than their needful effect if they are not translated into techniques and expressed in descriptive language and mathematically sound values that can be used in other fields of medicine.

PERSONNEL

In a series of articles dealing with the trends of technology in *Fortune*, a recent article predicts a technological revolution that may well dwarf any previous technical development in the application of the transistor, a device that promises to replace the vacuum tube and extend the uses of many of our most important mechanisms. However, it is unlikely that such mechanisms will ever replace the medical laboratory worker in physiology and pathology laboratories. Here the demand will be at least as great as it has been in the past for more and more well-qualified workers to carry out the myriad technical procedures that are the life blood of modern medicine.

It was the demand for such workers, and for some means to identify them, that prompted the American Society of Clinical Pathologists to establish the Board of Registry of Medical Technologists 25 years ago. Since then, 22,882 medical technologists have been certified. The great majority (18,018 in 1952) are still registered, and most of them are actively engaged in the practice of medical technology. According to a recent report [9] of the Council on Medical Education and Hospitals of the American Medical Association, 23,822 medical laboratory workers are currently employed by the hospitals of the United States. According to a recent study by the registry, in 1952 approximately 2,000 of the presently certified medical technologists were employed in medical schools and other research centers.

At the time of writing there were 538 approved schools of medical technology, with a yearly capacity of 4,116 students, which is an increase of 42 schools and 528 students over the previous year. This increase in both schools and their student capacity has continued uninterrupted since the first list of schools was published in the *American Journal of Clinical Pathology* in November, 1933.[10]

In spite of these encouraging trends, the supply of qualified medical laboratory workers has never met the demand, with the obvious dangers inherent in such a deficit in a field where incompetence may be so disastrous. The lack of properly trained workers is not by any means true in the field of medical technology alone, for approximately 20,000 kinds of employment are in vigorous and persistent competition to attract into their respective fields enough recruits to fill their increasing needs. These efforts at recruitment are being directed toward the smallest total number of 18 and 19-year-old men and women that has been in our population since 1890. It is small wonder, therefore, that medical technology, as well as all other areas of medical and ancillary medical education, is finding recruitment so difficult.

In a recent article, Associated Press Education Reporter David Marke told of the prospects for employment for June college graduates. These prospects continue to reflect the powerful forces that are being brought to bear on college students to enter various fields of employment and the continued and increasing demands for recruits. Reporter Marke states that Dean Fred Ajax, who is placement director of the Georgia School of Technology, estimates the demand in 1953 for graduates to be 75%

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[10] Board Report: Training Schools for Technicians Approved by the Board of Registry of the American Society of Clinical Pathologists, Am. J. Clin. Path. **3**: 484-488 (Nov.) 1933.

greater than in 1952. At Alabama Polytechnic Institute every senior received at least five job offers, and so it goes.

In almost all fields in which technologists of any kind are needed, greatly increased demands are found. Without exception placement officers report the demands for engineers and scientists as exceeding the supply by 5 to 1.

The salaries offered the newly graduated students also reflect the increased demand. Starting salaries are up, according to this report, from $25.00 to $50.00 over 1952. For graduates with bachelor degrees, starting salaries average about $375.00 a month, for persons with master's degrees $400.00, and for doctors of philosophy $500.00 and up. It is also notable and significant that nontechnical fields at the same educational levels offer on the average from $25.00 to $50.00 less in monthly salaries.

These facts are further accentuated by the efforts that large employers are making not only to attract newly graduated scientists but also to stimulate recruitment into their field of employment. Bethlehem Steel Corporation, as an example of this trend, has offered 45 colleges $3,000 for every graduate who completes its training course, and other companies offer such inducements as expense-paid tours of their plants and free transportation and moving expenses for new employees. Other industries are paying college placement offices a fee for every graduate recruited.

When we consider such matters as they affect all fields of employment of technical personnel, it is small wonder that medical technology is in such desperate straits. Salary levels in medical technology, in spite of continued increases, have always lagged behind others. No doubt this is largely because the majority of medical technologists are employed in hospitals, where salaries of all kinds, as a rule, are below comparable salaries elsewhere.

Fortunately, the postdepression rise in birth rate will soon begin to make available an increasing number of high school graduates. It is the mutual responsibility of all of us who are interested in the medical sciences to do all in our power to see that high school students are encouraged to enter the field of medical technology.

SCHOOLS OF MEDICAL TECHNOLOGY

It must be obvious that even the rapidly increasing number of approved schools of medical technology, with their present capacity of over 4,000 students a year, cannot meet the present needs, so it is urgently necessary for more schools to be established as soon as possible. Even though many schools have difficulty filling their classes, the more widely distributed the schools are the more students they will attract now. In the near future, when more students are available, the schools will have established their affiliations with colleges and universities, and will have had the opportunity to make their presence felt in the high schools of their vicinities.

If we believe, as I am sure we all must believe, that the future of medicine demands that medical technology be conducted by qualified laboratory workers, be it in the research laboratory, the clinical laboratory or elsewhere, then we must see that the rising generation is urged by every possible means to enter the profession of medical technology. We not only must see that the rising generation gets this message but must also see that the schools for their training are available for them, and that the courses and the teaching, and the textbooks, and the apparatus, and all the complex and ever-increasing armamentarium of all kinds of medical education are available for use by the young men and women when they present themselves.

The burden of carrying on the continuing recruitment campaign and in the organization and conduct of the schools must of necessity largely fall on the pathologist and the medical technologist who instruct the students. But everyone who knows the need must take an active part in individual recruitment and in making the field of the medical laboratory known and appreciated as widely as possible.

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CORTISONE INTERFERENCE WITH CALCIUM THERAPY IN HYPOPARATHYROIDISM

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At present there is not much information to be found in the literature concerning the effect of the adrenal steroid hormone cortisone on calcium metabolism. What has appeared seems somewhat contradictory. We therefore offer the following clinical observations, which tend to show that effective calcium therapy is not possible during cortisone administration. These observations seem to indicate that cortisone and calcium therapy counteract one another. Calcium excretion studies of the urine and feces were not made, but serum calcium and phosphorus studies were undertaken. Hypoparathyroidism is not common, and the striking interference with calcium therapy when cortisone was administered, with distressing symptoms of tetany suffered by the patient, prompts us to report this case.

REPORT OF A CASE

A 51-year-old white woman was first seen on Nov. 9, 1948, with symptoms of hyperthyroidism due to an adenomatous goiter. This was removed by subtotal thyroidectomy on Dec. 8. The adenoma of the right lobe was retrotracheal and difficult to deliver. Three days later tetany of the fingers and toes accompanied by paresthesia of the extremities developed. The Chvostek and Trousseau signs were elicited. The serum calcium level was 7.62 mg. per 100 cc. (normal 9.0-11.5 mg.), and

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the serum phosphorus level was 6.2 mg. (normal 3.0-4.5 mg.). Parathyroid extract, 300 units (3 cc.), was given intramuscularly daily for two days, and dihydrotachysterol (A. T. 10), two capsules (0.625 mg. each), was given daily. In addition, calcium was given both intravenously and orally. With this therapy the patient did well and was discharged on Dec. 15. The pathological report of the surgical specimen was thyroid adenoma. No parathyroid tissue was found.

On Dec. 27, the patient complained of tingling of her fingers and toes and was mentally sluggish. The serum calcium level at this time was 8.8 mg. and the basal metabolism rate was -1%. The dose of calcium orally was increased as was the dihydrotachysterol dosage. On Jan. 28, 1949, the patient was brought to the office in a state of mental confusion and complaining of severe cramps in her hands and feet. She was given calcium gluconate intravenously, with temporary relief, and was hospitalized. The serum calcium levels for the first few days of hospitalization were: Jan. 29, 7.15 mg. per 100 cc.; Jan. 30, 7.3 mg.; Feb. 3, 8.15 mg.; and Feb. 6, 8.72 mg. Therapy consisted of 300 units (3 cc.) parathyroid extract intramuscularly, calcium gluconate intravenously, and calcium lactate and dihydrotachysterol orally. The patient made an uneventful recovery. She went home and was given two dihydrotachysterol capsules and 3 gm. of calcium lactate daily. She checked her urine daily with the Sulkowitch reagent for calcium and had periodic serum calcium level determinations. A few of these were as follows:

Date	Serum Calcium Level in Mg. per 100 Cc.	Date	Serum Calcium Level in Mg. per 100 Cc.
Feb. 12, 1949	9.6	June 17, 1951	10.0
March 19	9.3	Dec. 6	8.8
April 1	10.1	Dec. 27	9.0
July 17, 1950	10.9	March 7, 1952	8.9
Nov. 16	8.3	Nov. 1	8.3
Nov. 29	9.2	Nov. 7	8.2

During the period from February, 1949, through October, 1952, the patient continued her therapy, at times taking less dihydrotachysterol, depending on the results of the urine calcium (Sulkowitch) study.

On Oct. 24, 1952, cortisone therapy was started, 25 mg. twice a day, for multiple osteoarthritis. The patient's appetite improved, as did the arthritis; however, on Oct. 31 the patient again complained of paresthesia and cramps in her hands and feet. Her appetite and semi-euphoric state persisted. The serum calcium level at this time was 8.3 mg. The dihydrotachysterol dosage was increased and calcium gluconate was given intravenously. However, the signs and symptoms of tetany became worse and Chvostek and Trousseau signs could be elicited. The antitetany therapy was intensified, and the patient now received parathyroid extract intramuscularly (300 units); dihydrotachysterol, 3 capsules daily; calcium gluconate intravenously; and 6 gm. of Neocalglucon (a calcium gluconate solution) daily. The patient became increasingly confused and found it difficult to answer questions. The tetanic spasms in her hands and feet became severer. On Nov. 8, she was again hospitalized. The serum calcium level at this time was 8.3 mg., the inorganic serum phosphorus level 6.1 mg., the alkaline phosphatase level 3.2 mg. (normal up to 13 units), and serum potassium level 15.6 mg. (normal 14-20 mg.). The electrocardiographic Q-T interval was 0.46 second in duration.

During this time the patient continued to receive the large doses of calcium orally and intravenously, dihydrotachysterol, parathyroid extract, and cortisone, 25 mg. twice a day. The Chvostek and Trousseau signs persisted, as did the mental dulness and depression. The patient's skin was dry, so much so that a superficial ulcer developed on the outer right thigh such as is seen in chronic trophic changes in hypoparathyroidism.

In reviewing the therapy, one of us (R. C. M.) was reminded of a physician with myasthenia gravis whom he had treated with six implanted pellets of desoxycorticosterone acetate (150 mg. each). One of the pellets was purposely crushed, and within two weeks marked polydipsia and polyuria developed. Coincident with these symptoms, symptoms of tetany developed, with Trousseau and Chvostek signs. The serum calcium level was 8 mg. and the phosphorus level was 3.9 mg. The patient showed pronounced muscular weakness. These signs and symptoms of tetany continued to be manifested for two months. It was felt that the desoxycorticosterone acetate was in some way interfering with the calcium and phosphorus metabolism, thus producing the tetany.

The thought that perhaps cortisone was producing the difficulty in controlling our patient with hypoparathyroidism led to stopping cortisone therapy. Within three days the patient was markedly improved. The signs and symptoms of tetany disappeared. The serum calcium level on the third day after cortisone therapy was stopped was 10.1 mg. and five days later 10.5 mg. At present the patient is being well maintained on 2 (0.625 mg.) capsules of dihydrotachysterol daily and 12 gm. of calcium gluconate daily. Seven serum calcium level determinations between the interruption in cortisone therapy and June 7, 1953, gave an average reading of 9.7 mg.

This case, in our opinion, demonstrates that the adrenal cortical steroids either decrease the absorption or increase the excretion of calcium or both. Despite the administration of calcium parenterally and orally, dihydrotachysterol, and parathyroid extract, the hypocalcemic state persisted. Soffer,[1] from observations made on patients with Cushing's syndrome and from observations by others [2] on patients treated with corticotropin, concluded that cortisone and corticotropin produced an increased excretion and a reduced absorption of calcium in the intestinal tract. The same was true of phosphorus but to a lesser extent.

We had occasion to observe a case of primary nontropical sprue in a 23-year-old white woman who came to us after being treated elsewhere with cortisone. She gave a history of diarrhea, weight loss, weakness, anemia, tetanic spasms of the fingers, and swelling of the lower extremities. The patient had not made any progress with various forms of therapy and therefore cortisone therapy was started. While cortisone was being given (100 mg. daily orally), the edema became generalized with swelling of hands and face and the tetanic spasms became much more severe, involving both upper and lower extremities. The use of calcium orally and intravenously along with a hydrochloric acid preparation (Acidulin) and vitamin D relieved the tetanic symptoms to some extent. Subsequently when cortisone therapy was stopped the tetanic spasms were well controlled by the calcium, hydrochloric acid preparation and vitamin D preparations. When the patient came under our care some weeks after the cessation of cortisone therapy, she had generalized anasarca. The total protein was 4.23 mg. per 100 cc., albumin 2.86 mg., globulin 1.37 mg. and albumin-globulin ratio 2:1.

Subsequently signs and symptoms of tetany developed, and the patient was hospitalized. She was given several blood transfusions to elevate the serum protein levels and to correct the anemia. Since that time she has been well

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1. Soffer, L. J.: ACTH and Cortisone: Physiologic and Clinical Considerations, M. Clin. North America 36: 791-809 (May) 1952.

2. Kinsell, L. W., and others: Metabolic Effects of Peptide Mixture Derived from ACTH (Li) in Comparison with Those Resulting from Whole ACTH Administration in a Human Subject, in Proceedings of First ACTH Clinical Conference, Philadelphia, Blakiston & Co., 1950, p. 70.

controlled with the usual liver extract administered parenterally, folic acid, calcium administered orally, vitamin D with liberal doses of dilute hydrochloric acid, multiple vitamins, and a high protein, moderate carbohydrate, and low fat diet. She is at the present time seven months pregnant and is feeling well.

It would seem that in this case the cortisone interfered with the calcium metabolism and intensified an already hypocalcemic state. That a low serum protein level may have been instrumental in producing the hypocalcemia must be admitted. As is known, hypoproteinemia causes a decrease in the total serum calcium because of a correspondingly low protein-bound calcium level. Cortisone is thought to produce a negative nitrogen balance through interference with protein synthesis from amino acids[3] and by increasing protein catabolism,[1] indirectly producing tetany. One would doubt that the factor of alkalosis played a part in the symptoms of tetany because there was no history of vomiting, the frequency of stools was four to six per day, and, in addition, the patient was receiving hydrochloric acid therapy.

Colcher and co-workers[4] in their series of eight cases of sprue treated with cortisone and corticotropin noted signs of tetany in three of the patients who were receiving cortisone. This they felt was due to hypochloremic alkalosis and associated hypocalcemia. The tetany in their cases was controlled by use of ammonium chloride and oral calcium. One of us (A. L. S.) treated a patient with ulcerative colitis with cortisone and later with corticotropin. Clinical tetany also developed during the period of cortisone administration. The symptoms were readily controlled by calcium administered orally and intravenously. Here too, after the cortisone therapy was discontinued, clinical tetany was no longer present.

COMMENT

From the clinical observations we have made, it would seem reasonable to conclude that cortisone affects calcium metabolism so that a negative calcium balance is produced. When there is already present a tendency toward tetany, cortisone therapy will increase the tetanic hazard. This mechanism is probably due to a combination of cortisone effects in (*a*) decreasing calcium absorption, (*b*) increasing calcium excretion, and (*c*) lowering the total serum calcium secondary to decreased serum protein resulting in a lowering of the protein-bound calcium. We may assume that the combination of these effects on calcium metabolism is not great enough in the average patient receiving cortisone therapy to produce clinical evidence of tetany unless there is already present an underlying condition that tends to produce tetany in its own right, such as seen in hypoparathyroidism, ulcerative colitis with poor calcium absorption, or a low serum protein level with a low serum-bound calcium level.

SUMMARY AND CONCLUSIONS

It was observed that the simultaneous administration of cortisone and drugs to overcome hypocalcemia resulted in nullifying the latter form of therapy. A case is reported of a 51-year-old woman who had postoperative hypoparathyroidism and was well maintained with drugs to overcome the hypocalcemia. The administration of cortisone for rheumatoid arthritis produced a rapid drop in serum calcium level, an elevation of serum phosphorus level, and the signs and symptoms of tetany with mental confusion. Discontinuance of cortisone therapy resulted in a prompt rise of the serum calcium, a drop in the serum phosphorus, disappearance of the signs and symptoms of tetany, and return to a normal mental state.

The antagonism between an adrenal steroid hormone —desoxycorticosterone acetate—and calcium-phosphorus metabolism was also observed in a physician in whom desoxycorticosterone acetate pellets had been crushed during implantation. Two other patients, one with nontropical sprue and one with ulcerative colitis, showed interference with calcium metabolism during the administration of cortisone therapy. It would seem from these clinical observations that cortisone interferes with calcium metabolism.

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[3] Irons, E. N.: Recent Studies on ACTH and Cortisone, M. Clin. North America 36: 229-246 (Jan.) 1952.

[4] Colcher, H.; Drachman, S. R., and Adlersberg, D.: Management of Intractable Sprue with Cortisone and Adrenocorticotropin (ACTH), Ann. Int. Med. 38: 554-568 (March) 1953.

COMMUNITY HEALTH PLANNING

STUDY OF "ATOMIC CITY" (RICHLAND, WASH.)

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Death rates in the "Atomic City" of Richland, Wash., based on a five year study, are one-half those of the nation, after correcting for population age differences. This represents a great decrease in suffering and a tremendous economic saving to this city of 24,000 persons. Nine factors are considered likely to have contributed most to the attainment of these results. A uniquely planned and integrated medical program, which has been operating during the nine years of this city's life, is felt to be one of the factors that has contributed to this record, of which the citizens are justly proud. This article is written to describe the medical program, because other American communities may profit from Richland's experience. Five years is a relatively short period for a statistical comparison of this type; however, we feel that this early study will be valuable to compare this period with the next period when the community will probably be incorporated.

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In the search for more satisfactory health for their people, many nations of the world have turned to socialized medicine. Strenuous efforts to socialize medicine are being made in this country, even though the United States enjoys the finest health of any large nation in the world. The answer to much of the socialized medicine problem lies in sound community health planning, participated in by all elements of the community. National health is simply the sum total of the health in all local areas. American initiative and ability applied at the local level should prove far more effective in providing good health and good medical care than a regimented national program, supported by higher and higher taxes. This article describes such an integrated program of (*a*) public health, (*b*) a community hospital center, (*c*) industrial medicine, and (*d*) private medical practice featuring very adequate specialty coverage.

In 1944, a modern city was built in the semiarid waste lands of southeastern Washington to house the workers of the secret Hanford Works, which was to produce plutonium for atom bombs. The town and plant were built and operated by the du Pont Company for the U. S. Army. In 1946, the program was turned over to the General Electric Company to operate for the U. S. Atomic Energy Commission. At present, the municipal functions of this city are managed by the company. The industry and the town have continued to grow, since it is predicted that atomic energy's peaceful uses in medicine and industry may outstrip its war uses. The population of Richland is now 24,000, and it is growing rapidly. The residents are planning for eventual private ownership of property and incorporation of the community.

Complete, integrated medical services have been made available by the industry that has operated the plant and the community for the government for a period of nine years. These services consisted of public health, industrial medicine, hospital, and, for the first six years, general patient care. With all facilities closely grouped and with activities coordinated, the community medical center idea has been a reality.

In the early years of the project, there was no assurance that the venture might not be short-lived. Under such conditions, general medical care was supplied by medical specialists and general physicians, operating under guaranteed income. As soon as it became apparent that the community would become stable, private practice by physicians replaced the old system. This occurred in 1950. The incentive of private practice has resulted in a decrease in the number of physicians required by about 35%, without any apparent change in the quality of care and with greater patient satisfaction. Salaries of the employed physicians were based on a 40-hour work week. Emergency night and Sunday calls were taken by the physicians on call. A recent survey by *Medical Economics* magazine indicated that the American physician in private practice works an average of 58 hours per week.[1] The survey also indicated the value of supporting personnel, in that the physician who employs one or more aids spends 40% less time per patient than does the doctor without assistants. From our experience, we predict that, even with an efficient supporting system, any medical program with salaried physicians will require one-third more physicians.

MEDICAL DEPARTMENT

The present organization of the medical department has changed little in essential features since its inception. The director is a physician who reports to the project manager. His administrative staff is composed of a physician who is head of public health, a physician who is director of industrial medicine, and an administrator for the hospital. Total employees of the medical department number 273, or 0.8 employee per 100 population served. Community physicians and dentists are members of the hospital staff and rent office space in adjoining clinic buildings. Close liaison is maintained with voluntary health agencies, such as the Bicounty Anti-tuberculosis league; county chapter of the National Foundation for Infantile Paralysis; Women's Field Army American Cancer Society; county chapter of the American Red Cross; local Community Chest; county chapter of the National Heart Society; county chapter of the National Society for Crippled Children and Adults; Community Health Council; and service clubs.

PUBLIC HEALTH

In general, Dr. C. E. A. Winslow's scope of public health has been accepted as the basis of the program in Richland.[2] This includes "the art and science of preventing disease, prolonging life and promoting physical and mental health through organized community effort." The six basic functions—vital statistics, communicable disease control, environmental sanitation, public health laboratory services, maternal, infant, and child hygiene, and health education—have been established. In addition, bedside nursing, school nursing, mosquito control, and welfare services have been incorporated. The welfare function deals primarily in the areas of family service, child welfare, and medical social work. Direct monetary relief is furnished by funds granted through the local community chest or county agencies. The basic public health program costs about $2.50 per person or $9.25 per family per year. This amounts to three cents a day, per family, the cost of a postage stamp. This is the amount that most public authorities agree is necessary for a good public health program.[3] Additional costs for a bedside nursing program, school nursing, mosquito control, etc., will depend upon local conditions. There are 20 employees in the public health and welfare program.

INDUSTRIAL MEDICINE

Industrial medical practice has been organized with the prime objective of preventing job-connected and personal illness and accidents and promoting physical and mental health of employees. The preventive objective has been given added impetus by the potential radiation hazard in the atomic project and the knowledge that treatment of the damaging effects of radiation is very ineffective. This absence of effective therapy, of course, also exists in many far-advanced nonoccupational disease states and can be alleviated by practicing the principles of preventive medicine. The concept that medicine has far too long concerned itself with treatment at the expense of prevention, which is really easier in many cases, is literally accepted. This concept has been observed to produce benefits for both employee and company.

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[1] The Average U. S. Physician, M. Economics 30:78 (Oct.) 1952; Your Economic Weather Vane, ibid. 30:91 (Feb.) 1953.

[2] Winslow, C. E. A.: Untilled Field of Public Health, Mod. Med. 2:183 (March) 1920.

[3] Hiscock, I. V.: Community Health Organization, ed. 4, Cambridge, Mass., Commonwealth Fund, 1950.

More specifically, this plan is carried out through (1) medical acitvities that concern the individual employee and (2) combined medical and engineering activities that concern the working environment. Activities that are entirely medical include preplacement and periodic medical examinations, provision for first aid, medical and surgical service while on the job, and health education, which includes mental health and health conservation. The combined medical and engineering functions include control of environmental conditions in work situations insofar as they may affect the health of employees, such as ventilation, atmospheric pollutions, radiant energy involved in atomic fission, or exposure to toxic chemicals or materials. The industrial medical program is designed to materially reduce (1) occupational disease, (2) accident frequency, (3) personal illness, (4) absenteeism, (5) compensation costs, and (6) labor turnover and to improve employee personal relations.

HOSPITAL

Kadlec, a 106-bed hospital, is registered with the Council on Hospitals and Education of the American Medical Association and is approved by the American College of Surgeons. It is also approved for residency in general practice and internship. The hospital is a member of the Washington State Hospital Association and the American Hospital Association and derives great benefit from these associations, which have played such an important role in the tremendous growth and progress of American hospitals. Nursing hours per patient day are maintained at about 3.5 for the general nursing services and 4 for obstetrics. The number of hospital employees per hospital patient is kept slightly less than two. The occupancy factor is maintained at 70 to 80% except during population peaks due to temporary large construction activity, when the occupancy factor sometimes exceeds 100%. The ratio of beds to population eligible for hospital care is 3 beds per 1,000 persons.

The hospital is the center of medical activities. Its well-equipped x-ray center, directed by a radiologist, serves the hospital patients, the physicians' private outpatients, public health, and employees. Four by five inch (10.2 by 12.7 cm.) photoroentgen chest films are routine for hospital admissions, new employees, and annual examinations of employees. An exception to this rule applies to employees whose work is in areas of potential exposure to radiation. They receive 14 by 17 in. (66 by 73.7 cm.) chest films because of the lower exposure. A visit every two years by the area mobile x-ray unit, under the direction of the Bicounty Anti-Tuberculosis League, adds to the over-all coverage for chest roentgenograms. In similar manner, the clinical laboratory under the direction of the pathologist furnishes services to all segments of the medical program. In an isolated community of this size, it would not be economically feasible to have a pathologist or a radiologist unless they handled most of this work. The pathologist also acts as consultant in experimental work aimed at better evaluation of the plant radiation hazards.

The medical library has about 1,100 volumes, subscribes to more than 100 medical journals, and has access to the medical school libraries of the universities of Washington and Oregon. Physicians, therefore, have excellent library facilities, although they are in an isolated location. The reading room of the library, with a seating capacity of 50 persons, serves as a meeting place for the medical staff and for groups interested in community health.

VITAL STATISTICS

During the past five years the actual death rate per 1,000 population in Richland has been only one-fourth that of the nation. For the period 1948-1952, the actual death rates per 1,000 population were 2.1, 2.3, 1.5, 2, and 3 for the five respective years. The average for this five years period was 2.2. For the United States as a whole, the death rate for the white population in 1950[4] was 9.5. This comparison does not take into account the unusual age distribution of the population of Richland as compared to the national distribution. To adjust for this effect, it was necessary to determine what the Richland death rate would have been for each year and for the five years if the national rate for each age group had prevailed in Richland (table 1).

TABLE 1.—*Richland Five Year Expected Death Rate and Actual Death Rate*

	1948	1949	1950	1951	1952	5 Year Average
Richland expected death rate per 1,000 population	4.4	4.2	4.4	4.4	4.6	4.4
Richland actual death rate per 1,000 population	2.1	2.3	1.5	2.0	3.0	2.2

TABLE 2.—*Richland Five Year Specific Age Death Rate and National Rate, 1950*

Age Group	Richland Five Year Rate per 1,000 Population	National Rate, 1950, per 1,000 Population (White)
Under 1	16.8	28.9
1-14	0.4	0.8
15-24	0.7	1.1
25-34	0.4	1.5
35-44	1.2	3.2
45-54	5.2	7.6
55-64	9.8	17.6
65+	34.9	66.2

Mr. L. G. Waters of our statistics unit, who made these statistical comparisons, concludes: "Comparing these expected rates with Richland's actual rates, there is conclusive statistical evidence that the Richland rates were lower in every case." It will be noted that the actual death rate per thousand for the five year period was 2.2, which is one-half the expected rate of 4.4 based on the national experience. Five year death rates by age groups in Richland are lower by statistically significant factors in each group (table 2).

Since the State of Washington death rates have followed the national rates rather closely, the comparison of Richland rates with State of Washington rates would probably differ little from the comparison with national rates. It is of interest to note that during the nine year period since the inception of the medical program, more than 6,000 Richland babies have been delivered at Kadlec Hospital without a maternal fatality.

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[4] Statistical Abstract of the United States, 1951, ed. 72, U. S. Bureau of the Census, 1951, p. 262.

CONTRIBUTING FACTORS

The health of a community is the result of many factors. What differences in Richland have contributed to the above results? The high economic status of the people and the well-integrated program of preventive and treatment medicine are felt to be factors of major importance. Following are nine factors that are discussed from the standpoint of their contribution to the results given above.

Economic Status.—Essentially there is no medical indigency in Richland. Eligibility for housing is contingent on employment in project-connected work; hence, every family has at least one breadwinner. This has less importance than it had in the past, since good medical care, food, and shelter are assured to even the poorest families today. Overweight in the prosperous is perhaps more serious than nutritional lack in the indigent.

Good Medical Specialty Coverage and Adequate Number of Physicians.—The fact that there has been no maternal death here, with more than 6,000 deliveries, the low infant mortality rate (five year average of 16.5), and the low hospital death rate (0.35%) are all evidence that a sufficient number of specialists favorably influence the over-all health results. Dr. Howard A. Rusk's studies indicate that in the United States a physician serves an average of 850 persons.[5] Richland's results have been obtained with one physician for each 1,200 persons, counting every physician. If we deduct physicians doing administrative, public health, and industrial medicine, it leaves one physician in clinical practice for each 1,800 persons. This confirms the contention that the desirable ratio of physicians to population has a wide range, depending upon local conditions. About one-third more physicians and dentists were required when they were working on a salary basis.

Industrial Medicine.—More than 90% of the employed persons, including the 9,000 General Electric employees in the community, receive good industrial medical care, as indicated by approval of this phase of our program by the Industrial Medical Association. Disease is detected in an earlier corrective stage, through preplacement and periodic examinations, and employees are referred to the family physician or dentist for correction. Assistance and advice is given to employees by industrial physicians and nurses in matters of personal hygiene, emotional disturbance, and personal illness. The quick treatment of even the most minor injury decreases the chance for infection and develops an attentiveness to such matters, which influences care of such injuries that occur at home. Formal and informal health education spread the knowledge necessary for the intelligent use of the many health facilities that are easily available. In these and a host of other ways, the employee is assisted in maintaining good mental and physical health. Results are improved human relations, decreased labor turnover and absenteeism, and greater efficiency of employees.

Industrial hygienists, radiological science workers, safety engineers, and health-conscious supervisors and workers contribute to making the plant a safe and healthful working place. The health and safety practices of the worker undoubtedly have a great influence on the attitudes and practices of the whole family. Since Richland is a "one industry community," the health practices of this industry have a tremendous influence on the health of the community. Absenteeism due to sickness among project employees has averaged 1.58% during the last six years, which is about half that experienced by industry generally. The national estimate is that 8 days are lost per year by men and 12 by women,[6] whereas, at Hanford Works, 3.9 days are lost per year by men and 7.43 by women.

Since General Electric employees in this project, with one or more years of service, are paid for excused absence due to sickness, the actual savings due to the lower sickness absentee rate are sufficient to pay the entire cost of the industrial medical program, which amounts to about $45 per employee annually.

Many large industries have found that a good industrial medical program more than pays for itself in reduced absenteeism and employee turnover, decreased spoilage, and improved human relations. If all industries, large and small, would install improved industrial medical programs, the influence on employee health and on general community health would be tremendous, and industrial leaders would be aiding in preventing the first major phase in the socialization of our country.

Medical Insurance.—Over 99% of the 9,000 employees of General Electric at Hanford Works and more than 90% of their dependents are covered by prepaid hospital and medical-surgical insurance. The premiums are paid partly by the employee and partly by the company. Other employed persons have Blue Cross or prepayment insurance, so that well over 90% of the citizens of Richland may enter the hospital, knowing that their hospital and surgical bills will be almost entirely paid. Fear of a large hospital bill often deters a person from entering the hospital until so late in the disease that his recovery is greatly delayed or even prevented. Because this fear is greatly allayed, Richland residents had an annual hospital admission rate in 1950 of 185 per thousand population. The state had a rate 37% lower than this; however, the state's average hospital stay was 38% higher than Richland's average stay of 5.3 days.[7] While more persons enter the hospital, the shorter average stay of each results in the same total usage of the hospital and the same bed requirement as other hospitals in the state. Early effective treatment results in fewer deaths, shorter convalescence, and decreased absenteeism.

Population Age and Racial Differences.—Since, in this study, comparisons of the Richland results with those of the state or nation are made by comparing persons in the same specific age groups, age is not a factor. Stated differently, since we have more young persons and fewer old persons, our mortality rate is expected to be 4.4 per 1,000 instead of 9.5 per 1,000 as for the nation. Difference in death rate due to racial differences has been minimized by comparing the Richland rate with the national rate for white persons, since this includes more than 99% of the residents of Richland.

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[5] Rusk, H. A.: Procurement, Assignment, and Utilization of Reserve Medical Officers, J. A. M. A. **147**: 723 (Oct. 20) 1951.

[6] Maxcy, K. F.: Rosenau Preventive Medicine and Hygiene, ed. 7, New York, Appleton-Century-Crofts, Inc., 1951, p. 1098.

[7] Powers, L. E.; Bennett, B. M., and Turner, E. L.: Acute Hospital Bed Needs, Northwest Med. **51**: 23 (Jan.) 1952.

Selection of Personnel for Hanford Project.—Persons were recruited for this project from all walks of life and from every state in the union. Because of a tight labor market, many persons were employed who would ordinarily have been considered unfit from a physical standpoint. Many physically handicapped persons were placed on jobs commensurate with their physical limitations, but the rejection rate for new employees was approximately 2%. Special selection of persons for the project would, therefore, appear to have little effect on the mortality rates.

Public Health Program.—The program in Richland is comprehensive but does not include any practices that are not recommended by recognized leaders in the field of public health. That results are surprisingly good, as compared to the average American community, is merely an indication that the average American community lacks some essential public health services. Since the financial requirements for a good public health program are pitifully small in comparison with the gains in longer, happier lives, it becomes obvious that the average American community requires something to awaken it to its needs. Perhaps physicians need to use evangelism to save bodies as ministers use it to save souls. As in other matters, it is so easy to endeavor to shift the responsibility to the state or federal level, failing to realize that to achieve the same end we merely add to the bureaucratic duplication and red tape and needlessly multiply the tax burden.

Persons should be educated to take care of their medical needs at the local level. Richland's public health funds are presently supplied directly by the federal government. Richland is expected to become a locally administered municipality in the near future. It will be interesting to see if the people will tax themselves, at the local level, sufficiently to continue the program as it is presently conducted. We are confident that this challenge will be met. The average American family spends 30 cents per day for tobacco and 60 cents per day for alcoholic beverages.[8] It is not asking too much of the average American family to spend 3 cents per day for a reasonably adequate public health program.

Integration of Medical Services.—At Richland, industrial medical services, including examinations and dispensary services, are administered in one section of the hospital. The public health building and the clinics for private medical specialists and dentists are on the "campus" in close proximity to the hospital. X-ray facilities under the direction of a board radiologist and laboratory services headed by a board pathologist are available for industrial medicine, public health, hospital patients, and outpatients. The industrial medical dispensary serves as the emergency admitting center for the hospital. The public health chief, in addition to the usual duties, assists in planning hospital expansion and health education for employees as well as the general public.

If John Smith's preemployment chest film indicates that he has early active tuberculosis, he is handled jointly by the industrial physician, the public health physician, and the private physician. Because of the proximity of buildings, all of these persons may quickly review the roentgenograms, check the medical records, make necessary physical and laboratory examinations, and arrange for proper institutional care. The public health officer and the industrial physician check family and close contacts at work for possible tuberculosis. These are all simple procedures, recognized as good practice in all communities but made complex by division of responsibility, failure in communication, and lack of understanding of the part each group plays in handling the patient. Had Mr. Smith been one of the many workers not covered by a reasonably good program of industrial medicine, his tuberculosis might have reached an incurable stage before detection and many persons might have been infected before the source of infection was discovered. Or the industrial physician might have told the prospective employee to seek care of his private physician, and, without follow-up, this might not have been done. If it had been done, the public health officer, located at the other end of the city, might not have been notified and case study for detection of sources would have been omitted. Or the community, being one of the 25% of communities who fail to appropriate funds for a basic minimum program,[9] might not have a public health officer.

ECONOMIC VALUE

The achievement in Richland is merely one example of how an integrated service, applying the same management methods to health programs that are applied in operating a multibillion dollar business, accomplishes things that sometimes are missed in the average American community. It is believed that many of the health measures listed above have assisted in preventing the deaths of an average of 2.2 persons in each thousand population, or 46 persons in Richland, a community of 24,000. These persons whose lives are lengthened can produce and contribute to family and community economy for a greatly extended period. What is this worth to the community?

Most persons appreciate the reduction in human suffering that has resulted from a good program of constructive medicine. Many have tried to evaluate man—to put a price on his economic worth. Hanlon,[10] drawing upon the work of Dublin and Lotka,[11] has arrived at the approximate money values for man at various ages. This value is an approximation of the average net earning power in terms of money of a person for the rest of his expected life span. Somewhat similar figures are used in compensating a family for the accidental death of an employee at work. We have done some interpolating for ages above 45, since Hanlon's table includes only ages up to

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[8] Dickinson, F. G.: Medical Care Expenditures, Prices and Quantity, 1930-1952, J. A. M. A. **147**: 1354 (Dec. 1) 1951.

[9] Halverson, W. T.: Administrative Practice, Reports of Committees, Am. J. Pub. Health **42**: 49 (May, pt. 2) 1952.

[10] Hanlon, J. J.: Principles of Public Health Administration, St. Louis, C. V. Mosby Company, 1950.

[11] Dublin, L. I., and Lotka, A. J.: Money Value of a Man, ed. 2, New York, Ronald Press Co., 1946.

45 years. For the age groups under 1 year, 1-14, 15-24, 25-34, 35-44, 45-54, 55-64, and 65 and over, the mid-values of lives are $800, $8,000, $18,000, $20,000, $15,000, $10,000, $6,000, and $3,000 for the respective age groups.

Taking the reduced number of deaths in Richland in each age group and multiplying by the appropriate money value for a person in this group, one arrives at a money value for the lives extended per thousand population; for example, in the age group 25-34 there are about 5,000 persons in Richland, and the average number of deaths annually has been two. If the death rate in this age group had been the same as for the nation as a whole, there would have been eight deaths in Richland. Subtracting these two, we find that the various combination of efforts has resulted in six fewer deaths annually in this age group. Multiplying by the estimated value of extending a life in this age group ($20,000), we arrive at a dollar saving of $120,000. Repeating this type of arithmetic for all age groups, we find that there is presently an average annual saving of $420,000. The figures were based on 1940 values. The value of a dollar is now approximately one-half what it was in 1940 in terms of living costs. It would seem appropriate to multiply these values by two, giving an annual saving greater than three-quarters of a million dollars.

Richland has no medical resources that are not available to the average community. The problem has been simpler than in most communities. The small investment needed for a good health program is within the reach of any American community. The average American is being made increasingly aware by such studies as those mentioned above that minor savings at the expense of the public health program is, as Hanlon expresses it, "penny wisdom and pound foolishness." To an increasing extent, industries are realizing that a good industrial medical program more than pays for itself in decreased absenteeism, increased employee efficiency, and decreased turnover. Improved community health, as indicated in this study, is an added dividend.

Prepaid medical care with the wholehearted support or medicine, hospitals, and organized groups throughout the country, is expanding at a tremendous rate. Voluntary health insurance for more than 90% of the people in Richland has definitely assisted in reducing mortality rates. It is hoped that this will serve as a stimulus for all communities to attain such coverage. The good progress that is being made is indicated by the recent report of the Council on Medical Service of the American Medical Association that there was ample reason to predict that 90 million persons would be covered by some form of prepaid voluntary health protection by the end of 1952.[12]

Every community seeks to attain as smooth an integration of its health service as possible. We are sure that the coordination and integration of medical services here have contributed much to the health of our residents. The high degree of specialty coverage that we have here is not attainable in all communities; however, many communities would benefit by a greater degree of specialty coverage than they now have, and efforts of civic groups along this line are usually fruitful.

SUMMARY

Conditions in Richland have been such that we are fortunate enough to have a well-integrated program of public health, adequate hospital facilities, specialty as well as general practice coverage, a good industrial medical program for most employed persons, and voluntary health insurance for more than 90% of the residents. Over a five year period, such a program, along with a high economic status of the people, has contributed to reduce mortality rates to half those of the nation, and this has resulted in estimated saving of nearly three-quarters of a million dollars annually. Follow-up studies will be made to see whether this trend persists.

Kadlec Hospital (Dr. Norwood).

[12] Report of Meeting of Council on Medical Service, J. A. M. A. **150**: 698 (Oct. 18) 1952.

CLINICAL NOTES

PHYSICAL SIGN OF TIGHT MITRAL STENOSIS

AID IN SELECTION OF PATIENTS FOR VALVULOTOMY

William Dressler, M.D.
Morris Kleinfeld, M.D.
and
Charles B. Ripstein, M.D., New York

Surgical repair of mitral stenosis has been proved beneficial in suitable subjects. Many patients who have mitral stenosis of moderate degree may engage in normal activities and live a normal life; they do not require surgical treatment. Only those with tight mitral stenosis should be subjected to surgery.[1]

Ravin and associates [1b] studied 17 patients in whom the diagnosis of tight mitral stenosis was confirmed by surgical exploration. These authors listed right ventricular hypertrophy as one of the significant features of tight mitral stenosis. They pointed out the difficulty that is occasionally encountered in assessing right ventricular hypertrophy by roentgenologic study; they further stressed that electrocardiographic evidence of right ventricular hypertrophy was present only in a minority of their patients.

A physical sign of right ventricular hypertrophy can often be demonstrated. It is characterized by a heaving pulsation of the precordial area felt during systole pri-

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[1] (*a*) Friedberg, C. K.: Diseases of the Heart, Philadelphia, W. B. Saunders Company, 1949, p. 584. Andrus, E. C.: Selection of Patients with Mitral Stenosis for Surgical Treatment (Valvulotomy), Mod. Concepts Cardiovas. Dis. **20**: 116 (Dec.) 1951. Bland, E. F.: Surgery for Mitral Stenosis, Circulation **5**: 290 (Feb.) 1952. Harken, D. E., and others: The Responsibility of the Physician in the Selection of Patients with Mitral Stenosis for Surgical Treatment, ibid. **5**: 349 (March) 1952. (*b*) Ravin, A., and others: Diagnosis of Tight Mitral Stenosis, J. A. M. A. **149**: 1079 (July 19) 1952. (*c*) Griffith, G. C., and others: The Selection and Medical Management of Patients with Mitral Stenosis Treated by Commissurotomy, Circulation **7**: 30 (Jan.) 1953.

marily in the left parasternal region.[2] Viar and Harrison [3] found the precordial pulsation more reliable for the diagnosis of right ventricular hypertrophy than electrocardiographic and roentgenologic evidence. The pulsation is usually absent if hypertrophy of the right ventricle is slight, or, if hypertrophy is marked, it is of the concentric type, as, for instance, in patients with compensated pulmonary stenosis. It is most frequently encountered in mitral valve lesions in which dilatation of the left atrium forces the heart toward the anterior chest wall, thus enabling the enlarged right ventricle to transmit its forceful pulsation to the precordial region. When clinical signs point to mitral stenosis, heaving pulsation in the precordial area invariably indicates marked narrowing of the mitral orifice.[2] The validity of this view has been tested in recent years by observations made during valvulotomy. The precordial pulsation was present in 15 of 17 patients in whom the diagnosis of tight mitral stenosis was later confirmed by surgery. In the two patients in whom the precordial pulsation was absent, tight mitral stenosis was associated with tricuspid regurgitation. The latter is known to cause a depression of the precordium during systole.[4]

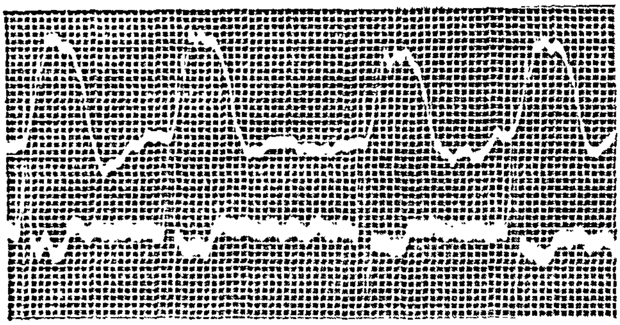

Fig. 1.—Upper tracing represents a displacement curve of the precordium; curve rises steeply at the onset of systole and forms a plateau similar to the palpable systolic elevation. Upward movement of the curve indicates lifting of the chest wall. Electrocardiogram below.

Heaving precordial pulsation in patients with mitral stenosis has proved to be a valuable aid in the selection of cases for surgery. This simple clinical sign is illustrated by the following case reports.

REPORT OF CASES

Case 1.—A 37-year-old housewife was admitted to the hospital on Oct. 2, 1952. The patient gave no history of rheumatic fever. At the age of 22, she began to tire easily while doing house work. At 25, she first learned that she had a heart murmur. Subsequently her physical capacity decreased progressively. She became breathless when she climbed five or six steps. During the past year, even walking on a level surface was poorly tolerated. When the patient walked just one block, she gasped for air, and, if she did not rest for awhile, she felt like fainting. Once while walking pulmonary edema with bloody sputum developed. In February, 1952, swelling of the ankles was observed. In September, 1952, the heart action became irregular.

Physical examination revealed a well-developed woman who did not appear severly ill. Cyanosis, dyspnea, and edema were absent. The cervical veins were not distended but filled during systole and collapsed during diastole. The lungs were clear. An apical thrust of the heart was not felt. During systole, a heaving pulsation of marked intensity was seen and felt in the precordial area. It extended between the third and fifth interspaces from the left parasternal line as far as 1 cm. beyond the left midclavicular line. Auscultation in the apical region revealed a snapping first and a loud second sound and a rumbling diastolic murmur. More medially, a soft blowing systolic murmur was heard. The second pulmonic sound was greatly accentuated. The heart rate was 80 per minute. The blood pressure was 135/95 mm. Hg. There was no evidence of congestive heart failure. The pulsation of the precordial area was recorded by means of the Cambridge mechanical transducer. The graph shown in figure 1 was taken with the receiver, a small funnel, placed in the fourth intercostal space in the left parasternal line. The tracing rises about 0.04 of a second after the onset of QRS and forms a plateau similar to the elevation felt during systole.

Roentgenologic study showed marked enlargement of the heart, especially of the right ventricle. The outflow tract of the left ventricle appeared to be elongated. The left atrium was moderately dilated. The pulmonary artery segment was prominent, and the hilar shadows were enlarged. Examination in the lateral view showed that the enlarged right ventricle was in broad contact with the anterior thoracic wall. An electrocardiogram demonstrated atrial flutter, marked right axis deviation, and prominent R deflections in the right precordial leads. The clinical diagnosis was tight mitral stenosis, probably associated with slight mitral regurgitation.

Mitral commissurotomy was performed on Oct. 15, 1952. The mitral orifice was tight and admitted no more than the tip of the index finger. There was minimal mitral regurgitation. Finger fracture of the fused commissures was easily performed. The patient made an uneventful recovery, and, seven weeks after the operation, she reported that her capacity for effort had markedly increased.

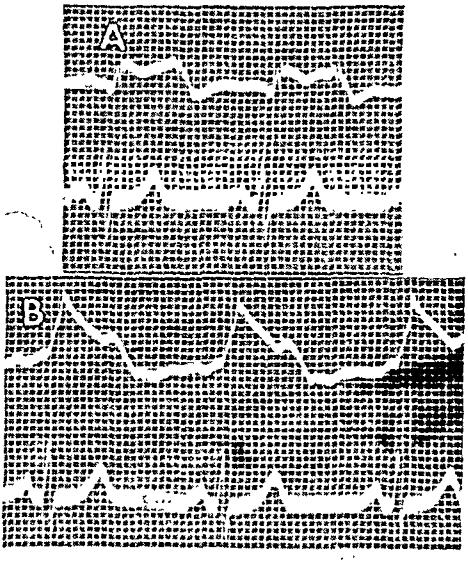

Fig. 2.—Upper tracings in both graphs represent displacement curves of the precordium taken in the fourth intercostal space, *A*, in the left parasternal line and, *B*, in the left midclavicular line. Electrocardiograms below.

Case 2.—A 28-year-old housewife was admitted to the hospital on July 27, 1952. She had had chorea at the age of nine. At that time, a heart murmur was said to be present. Subsequently the patient tired easily and often complained of muscle pain in the extremities. She married at the age of 22 and delivered a healthy child two years later. During labor, acute pulmonary edema developed. After pregnancy, the patient's condition progressively deteriorated. She felt weak and could

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2. Dressler, W.: Pulsations of the Wall of the Chest: General Consideration, Arch. Int. Med. **60**: 225 (Aug.) 1937. Dressler, W.: Symposium on Cardiovascular Diseases: Cardiac Diagnosis Without Laboratory Aid: Pulsation and Percussion Signs, M. Clin. North America **34**: 721 (May) 1950.

3. Viar, W. N., and Harrison, T. H.: Chest Pain in Association with Pulmonary Hypertension: Its Similarity to Pain of Coronary Disease, Circulation **5**: 1 (Jan.) 1952.

4. Dressler, W.: Pulsations of the Wall of the Chest: Pulsations Associated with Tricuspid Regurgitation, Arch. Int. Med. **60**: 441 (Sept.) 1937.

scarcely do her housework. In the past two years, she could walk no more than one short block. When she forced herself to walk further, she became breathless, started to cough, and, on occasions, felt severe pain in the chest and back.

Physical examination showed a well-developed woman who did not appear to be seriously ill. She could lie flat in bed without experiencing shortness of breath. Cyanosis and edema were absent. The lungs were clear. The apical thrust of the heart was felt in the fifth intercostal space in the left midclavicular line. It had a "snappy" quality and was neither broad nor heaving. In the precordial area, a heaving pulsation could be seen and felt. It extended between the third and sixth ribs from the left sternal margin to the left midclavicular line. Auscultation in the apical area revealed a presystolic murmur, a loud first sound, and a prolonged diastolic rumble. Similar findings of lesser intensity were heard close to the sternum. The second pulmonic sound was greatly accentuated. The heart rhythm was regular, and the rate was 72 per minute. The blood pressure was 110/70 mm. Hg.

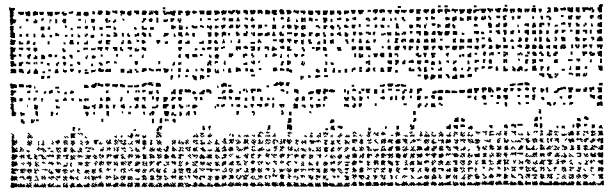

Fig. 3.—In patient with mitral stenosis, symptoms and signs point to a valve lesion of mild degree. The upper tracing represents displacement curve of the precordium taken from the fifth intercostal space in the left parasternal line; shallow depression is seen during systole. Electrocardiogram below.

The precordial pulsation was taken from the fourth intercostal space (fig. 2), in the left parasternal line, and in the left midclavicular line. In both graphs, the tracing rises early in systole and forms a plateau similar to the elevation felt during systole. Roentgenologic study indicated a moderately enlarged heart with a flattened left border. The left atrium was dilated. The right lateral view showed fulness of the cardiac shadow anteriorly, close to the sternum, that was thought to be due to enlargement of the right ventricle. An electrocardiogram showed regular sinus rhythm, signs suggestive of atrial hypertrophy, and semivertical electrical position of the heart.

Commissurotomy was performed on Aug. 4, 1952. The mitral valve was tightly stenotic and admitted no more than the tip of the little finger. There was a slight regurgitating jet. Finger fracture of the calcified mitral ring was easily performed. The postoperative course was uneventful. When the patient was seen four months after operation, she expressed great satisfaction with the result. Her capacity for effort had increased greatly. She could climb two flights of stairs and do house work that she could not before because of marked dyspnea.

COMMENT

Normally, the precordial area over the right ventricle shows no heaving pulsation during systole. Sometimes, especially in young persons with flexible ribs, a slight depression is noted that is caused by the diminution of the cardiac volume.[2] Similarly, in instances of moderate mitral stenosis, the precordial area is either completely quiet or shows a slight pulsatory depression during systole. The complaints of a 48-year-old woman with mitral stenosis were mainly of nervous nature; her capacity for effort was nearly unlimited. None of the signs pointed to tight mitral stenosis. The graph (fig. 3) was taken from the fifth intercostal space in the left parasternal line. Instead of a plateau elevation, as shown in figures 1 and 2, a shallow depression was noted during systole.

In patients with mitral stenosis, a heaving pulsation is frequently observed during systole in the precordial area over the right ventricle. The displacement is usually most marked in that part of the precordium adjacent to the left sternal margin between the third and sixth ribs. The pulsation may sometimes extend over the lower half of the sternum and slightly beyond the right sternal margin; caudally, it may reach the left costal arch. Occasionally, when the outflow tract of the greatly enlarged right ventricle has shifted considerably to the left, the heaving pulsation is most pronounced in the left midclavicular line.

It should be stressed that the precordial pulsation can be recognized without the aid of graphs merely by inspection and palpation. Sometimes, when the displacement is marked, the chest piece of the stethoscope resting on the precordium can be seen to be lifted with each systole. In all instances, the pulsation is easily recognized by palpation. It is best felt when the examiner, standing to the patient's right, applies the carpal base of his right hand with considerable pressure to the precordial area close to the lower half of the sternum.

Johnston and Overy[5] obtained, with an electric transducer, displacement curves from the precordial region close to the left sternal edge that showed "prominent upward waves in systole" in patients with mitral stenosis. They suggested that systolic distension of a large right atrium resulting from tricuspid regurgitation rather than right ventricular hypertrophy was responsible for the precordial pulsation. This interpretation is at variance with our experience. Tricuspid regurgitation, when marked, tends to cause a depression of the precordial area because of the marked diminution in the volume of the right ventricle.[4] Figure 4 shows graphs that were obtained from a 47-year-old patient who was operated on for tight mitral stenosis. An associated tricuspid regurgitation was

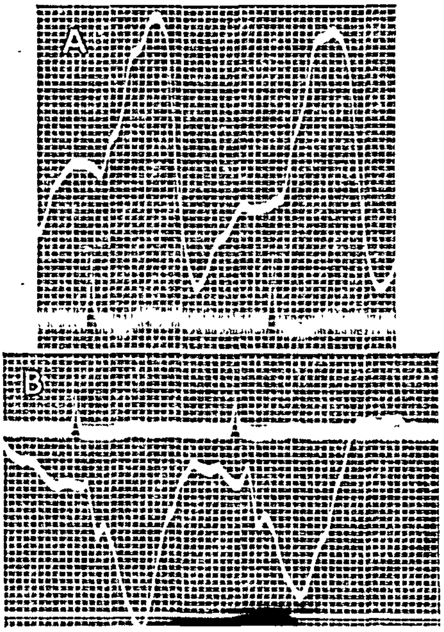

Fig. 4.—In patient with tight mitral stenosis and marked tricuspid regurgitation, *A*, upper graph of liver pulse shows marked elevation during systole; electrocardiogram below. *B*, lower graph taken over the fourth interspace in the left midclavicular line shows a distinct depression during systole; electrocardiogram above.

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[5] Johnston, F. D., and Overy, D. C.: Vibrations of Low Frequency over the Precordium, Circulation 3: 579 (April) 1951.

revealed by observation of an expansile systolic pulsation of the liver and the cervical veins. Graph *A*, taken from the liver, shows a marked systolic upward wave. Graph *B*, taken from the fourth interspace in the left midclavicular line, demonstrates a depression of the precordium during systole.

SUMMARY AND CONCLUSIONS

A physical sign associated with tight mitral stenosis is described. It is characterized by a heaving pulsation during systole of the precordial area over the right ventricle. The pulsation is caused by the forceful action of a markedly enlarged right ventricle. Dilatation of the left atrium that forces the heart toward the anterior chest wall is probably a contributing factor. Correlation of the precordial pulsation with observations made during surgery indicates that displacement caused by pulsation is associated with tight mitral stenosis. The sign has proved to be a useful aid in the selection of patients for commissurotomy.

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COUNCIL ON PHARMACY AND CHEMISTRY

REPORT TO THE COUNCIL

The following paper, prepared by Nicholas D'Esopo, M.D., of the Veterans Administration Hospital, West Haven, Conn., is the fifth in a series of progress reports on the cooperative investigation of the chemotherapy of tuberculosis that was initiated by the Veterans Administration, Army, and Navy in May, 1946. The report immediately preceding this described the situation as it existed at the time of the Tenth Conference on the Chemotherapy of Tuberculosis, in January, 1951; the present report is designed to cover the two year interval between that date and the Twelfth Conference, held in February, 1953. The number of cooperating hospitals has remained substantially unchanged at 50 but, during this interval, the number of cases reported has increased from 10,000 to approximately 15,000.

The Council has authorized publication of this report.

R. T. Stormont, M.D., *Secretary.*

CHEMOTHERAPY OF TUBERCULOSIS IN MAN

PRESENT STATUS

The mechanics of the study of the chemotherapy of tuberculosis by the Veterans Administration, Army, and Navy have been described in previous reports[1] and are reviewed briefly here. The cooperating hospitals developed, and repeatedly revised, a series of protocols that dealt with such matters as diagnostic criteria, regimens, and laboratory procedures. The primary purpose has been to compare the efficacy of a series of chemotherapeutic regimens, the relative values of which were unknown at the time the comparisons were initiated. The patients have been divided among these regimens by random allocation on the basis of their hospital registration number. Individual case report forms, which permit the collection and analysis of data for consideration by the periodic conferences, are utilized. The criteria of efficacy have gradually been limited to the objective observations of sputum conversion and radiological change. Adjuvant therapy in the form of bed rest has been continued without substantial change since 1946 and, in the form of pulmonary resection or collapse, has been employed at the discretion of the investigators since the fall of 1947. Liaison has been maintained by the prompt circulation of informal progress reports to which each hospital contributes and by the annual conferences that are attended by investigators and consultants. In the past three years, increasing emphasis has been laid upon "pilot studies" for which small groups of hospitals volunteer at the time of a conference; it is the purpose of these studies to explore new drugs or procedures that, depending upon their promise or lack of it, are thereafter either incorporated into the general study for a broader examination or are rejected.

The course that the study pursued can be tersely summarized as follows: After the usefulness of streptomycin was established (1946-1947), changes in dosage and in the duration of treatment were explored (1947-1949) in an attempt to enhance that usefulness and to circumvent the disadvantages of the drug's toxicity and the resistance that tubercle bacilli developed to it. Subsequently, the study proceeded (1949-1952) to investigate the newer chemotherapeutic agents and is now proposing to evaluate certain adjuvant measures, such as pneumoperitoneum, when given in conjunction with prolonged chemotherapy.

A study of this kind has numerous obvious advantages and disadvantages. Chief among the advantages is the rapidity with which large masses of data can be gathered, a point of particular value in such a chronic and protean disease as tuberculosis; chief among the disadvantages is the large number of workers (quite literally, hundreds) who participate in the study, with the consequence that the incomplete or inaccurate work of a few dilutes the accuracy of the work of the many.

For the purposes of the present report, it has seemed best not to present figures and tables similar to those employed in preceding reports but rather to discuss the present status of the chemotherapy of tuberculosis in a broader and more narrative fashion. This is made possible by the fact that, although many problems remain to be solved, there is now a vast amount of data and a great degree of agreement on certain fundamental principles of chemotherapy in this field. This agreement even extends to the similar studies, formulated somewhat later, by the U. S. Public Health Service and the Medical Research Council of Great Britain.[2b] (The similarities between the protocols adopted by these three groups are quite astonishing, indicating, perhaps, that they are the best that can be expected.) It would appear that the time is approaching when it will be feasible to delegate to the general practitioner certain phases of the treatment of tuberculosis now undertaken only by the phthisiologist. This report is primarily directed to these nonspecialists and will be concerned almost exclusively with pulmonary tuberculosis. First discussed is the present standing of individual drugs and their regimens; a discussion of more general topics follows.

INDIVIDUAL DRUGS AND DRUG REGIMENS

Streptomycin and p-*Aminosalicylic Acid.*—Since 1949, streptomycin has been administered to patients only in combination with some other antituberculosis agent. The oldest of these combined regimens is that employing *p*-aminosalicylic acid. The greater part of our knowledge of combined therapy in tuberculosis has come from experience with this regimen. In the beginning, 1 gm. of streptomycin was used daily with 12 gm. of *p*-aminosalicylic acid daily. In 1950, the regimen consisting of 1 gm. of streptomycin given twice weekly and 12 gm. of *p*-aminosalicylic acid daily was explored. In Janu-

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Prepared at the request of the Twelfth Veterans Administration-Army-Navy Conference on the Chemotherapy of Tuberculosis, Atlanta, Ga., Feb. 9-12, 1953.

[1] Reports to the Council on Pharmacy and Chemistry: (*a*) Effects of Streptomycin on Tuberculosis in Man, J. A. M. A. **135**: 634 (Nov. 8) 1947; (*b*) Streptomycin in Treatment of Tuberculosis: Current Status, ibid. **138**: 584 (Oct. 23) 1948; (c) Current Status of Chemotherapy of Tuberculosis in Man: A Summary Report, ibid. **142**: 650 (March 4) 1950; (*d*) Chemotherapy of Tuberculosis in Man: Present Status, ibid. **147**: 253 (Sept. 15) 1951.

[2] (*a*) Transactions of the Tenth Conference on the Chemotherapy of Tuberculosis, Veterans Administration, Washington, D. C., Jan., 1951. (*b*) Transactions of the Eleventh Conference on the Chemotherapy of Tuberculosis, Veterans Administration, Washington, D. C., Jan., 1952. (*c*) Transactions of the Twelfth Conference on the Chemotherapy of Tuberculosis, Veterans Administration, Washington, D. C., Feb., 1953.

ary, 1952, this regimen had all but replaced that of daily administration of streptomycin. A large number of patients have now been treated by both the daily streptomycin and twice-weekly streptomycin regimens; statistical analysis indicates that they are quite similar in therapeutic efficacy. In patients receiving their first course of chemotherapy, the incidence of sputum conversion during treatment with either of the two regimens after the eighth month is in the range of 60 to 80%, and moderate to marked improvement as shown by roentgenography occurs in approximately 80%. Unfavorable changes in roentgenograms during therapy are uncommon, probably in the order of 5 to 10%. The protocols under which these studies are made permit any form of adjuvant therapy to be employed during chemotherapy; however, analysis of the "background" data suggests that collapse therapy and surgery were used with approximately equal frequency in both groups of patients.

While use of streptomycin twice weekly and *p*-aminosalicylic acid daily is now considered the regimen of choice by most, a few investigators assert that some patients do better if they are treated with streptomycin daily. They believe that it is probably incorrect to attempt to decide upon a single streptomycin-*p*-aminosalicylic acid regimen that will be suitable for all cases and that patients with small lesions, for example, may do quite as well with streptomycin twice weekly as with the daily regimen, whereas patients with large cavities may require streptomycin daily. It is hoped that a more detailed analysis of the large amount of statistical material in the possession of the study may supply the answer to this question.

Abundant evidence indicates that bacterial sensitivity to streptomycin is better maintained with the twice weekly streptomycin regimen than with the daily; however, other data suggest that streptomycin twice weekly is not always sufficient to preserve bacterial sensitivity to *p*-aminosalicylic acid. This is another point that may be resolved by a more careful analysis of data already at hand.

Combined streptomycin and *p*-aminosalicylic acid therapy has been used for almost five years, and much has been learned about the efficacy and toxicity of this regimen. To many clinicians, this regimen is synonymous with the chemotherapy of tuberculosis; its therapeutic effect has become more or less predictable to the experienced. The influence of this experience may have the disadvantage of delaying acceptance of potent, new agents, and, in some instances, may actually impede the investigation of minor drugs that might prove to be of value. On the other hand, it lessens the risk of assuming that a new regimen, such as streptomycin and isoniazid combined, possesses all the qualities that have come to be associated with combined streptomycin and *p*-aminosalicylic acid therapy before actual experience with the newer regimen is worked out. The average physician should probably depend upon a tried regimen like streptomycin and *p*-aminosalicylic acid combined until other regimens have been proved to be superior in adequate clinical trials. The use of streptomycin and isoniazid combined as the initial chemotherapy of pulmonary tuberculosis entails the risk of bacterial resistance to the only two really effective antituberculosis drugs in use. Whether this combination of two major agents has a distinct advantage over a combination of a major agent (streptomycin) and a minor agent (*p*-aminosalicylic acid) must be determined.

The practice of prescribing *p*-aminosalicylic acid alone is probably uncommon at the present time in this country. It bears mention only because it is to be avoided. Tubercle bacilli often become resistant to the drug. When this occurs, it loses its ability to delay or prevent resistance to streptomycin if it is used later in combination with that drug. It is paradoxical that *p*-aminosalicylic acid, itself an extremely weak chemotherapeutic agent, allows the almost unlimited prolongation of streptomycin therapy when both drugs are used together.

The optimum dosage of *p*-aminosalicylic acid used in combination with streptomycin is not known. A few data suggest that doses of 5 to 10 gm. per day are less effective in preserving sensitivity to streptomycin in combined therapy than larger doses, such as 20 gm. daily.[3] It is well to remember that the dose commonly employed, 12 gm. per day, is simply the largest dose tolerated by the average patient. This dose, however, has the sanction of experience; in the majority of cases it does delay or prevent development of resistance to streptomycin. Hence, it would seem wise for the physician to adhere as closely as possible to this daily dose, with an awareness of the possibility that doses below this amount may be ineffective in preventing resistance to streptomycin.

In computing and reporting the dosage of *p*-aminosalicylic acid it should be remembered that its salts weigh considerably more than the free acid. Thus, 16.5 gm. of sodium *p*-aminosalicylate contains only 12 gm. of the acid, and similarly 12 gm. of sodium *p*-aminosalicylate contains approximately 8.7 gm. of acid. To state amounts in terms of the salts is misleading; it is suggested that the dosage be referred to in terms of the free acid, the active form of the drug.

The occurrence of sensitivity reactions in patients receiving *p*-aminosalicylic acid is well known. The peak incidence is toward the end of the first month of therapy. Patients have the usual characteristics of sensitivity phenomena, which appear abruptly with fever, skin rash, and constitutional symptoms of varying severity. It is absolutely mandatory that use of the drug be discontinued when these reactions occur. Until isoniazid became available, it was necessary to "desensitize" patients in whom such reactions occurred by using small, gradually increasing amounts of the drug. Frequently this required two months to accomplish, and much time was lost in consequence. Now, it hardly seems necessary to attempt to desensitize these patients, as isoniazid almost always can be substituted with a delay of only several days.

Dihydrostreptomycin.—After a considerable experience in which the effectiveness and toxicity of dihydrostreptomycin were compared with that of streptomycin, the cooperating hospitals discontinued any general use of the former drug in 1950. Since that time there has been no reason to reinstate it. Experience has reaffirmed the earlier conclusions that this reduction product of streptomycin causes appreciably more deafness than the parent drug.[4] In a dosage of 1 gm. daily, this toxicity does not become apparent until the drug is given for more than four to six months. For this reason, studies in which patients have been treated with dihydrostreptomycin for only four months are apt to give an inaccurate idea of its potential toxicity, especially now that there is a tendency toward the use of much longer courses of chemotherapy. It should be pointed out that the vestibular and auditory toxicity of either streptomycin or dihydrostreptomycin is appreciably diminished in the twice-weekly regimens.

At present the chief advantage of dihydrostreptomycin appears to be its use for those patients, usually in the older age group, whose vestibular mechanism is peculiarly susceptible to streptomycin. It is also of value for patients who are allergic to streptomycin. A combination of dihydrostreptomycin and streptomycin, using half the usual quantities of each drug, is currently being investigated; its purpose is to diminish or prevent both auditory and vestibular toxicity without affecting therapeutic efficacy. Results are said to be promising, but studies of prolonged administration have not yet been reported.[2c]

Isoniazid.—Isoniazid became available to the medical profession in May, 1952. Considerable experience with it has now accumulated since the pilot studies were begun by the Veterans Administration, Army, and Navy group in early February, 1952. The effectiveness of a daily dose of 0.15 gm. was compared with that of 0.3 gm. and with the "standard" regimen of streptomycin and *p*-aminosalicylic acid combined. The results of these trials,[2c] in general, supported the first reports that indicated that isoniazid was an antituberculosis agent of great potency, but were certainly not as striking as those reported by the original investigators. This discrepancy may be explained, at least in part, by the fact that many of the patients in the original studies were treated with the isopropyl derivative of isoniazid, iproniazid, which often causes spectacular symptomatic improvement and weight gain. The clinical trials in our hospitals made it clear that isoniazid, by itself, resulted in great symptomatic benefit to the patient, but those roentgenographic and bacteriological changes that lead to cure, or even arrest, of the disease often did not occur. In the majority of the patients treated with isoniazid alone, isoniazid-resistant bacilli could be recovered after the second month of treatment. When bacterial resistance to a drug occurs, the assumption that continued treatment with that drug will not be effective is justified. This was certainly true of streptomycin.

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[3] Prevention of Streptomycin Resistance by Combined Chemotherapy: A Medical Research Council Investigation, Brit. M. J. 1:1157 (May 31) 1952.

[4] O'Connor, J. B.; Christie, F. J., and Howlett, K. S., Jr.: Neurotoxicity of Dihydrostreptomycin, Am. Rev. Tuberc. 63:312 (March) 1951. Footnotes 2a and 2c.

The situation with isoniazid appears to be somewhat different. In a seminar at the Twelfth Conference (February, 1953),[2c] it was reported that, while patients often fail to improve further when bacterial resistance to isoniazid develops, they often maintain clinical improvement made before bacterial resistance occurred—sometimes in the face of unfavorable roentgenographic changes. This relative lack of correlation between resistance to isoniazid and the clinical condition of the patient may be related to the virulence of isoniazid-resistant tubercle bacilli—a matter that is now receiving wide notice. Several investigators reported that isoniazid-resistant bacilli are often avirulent: they fail to cause tuberculous infection when injected into susceptible experimental animals.[2c] This phenomenon is quite variable; the frequency with which it occurs is not yet known, but it is by no means uncommon. Obviously, there is much speculation on the practical significance of this laboratory finding in the treatment of human tuberculosis. At the present time its significance is not known. Patients who are doing poorly clinically and becoming progressively worse may harbor isoniazid-resistant bacilli that are not virulent for guinea pigs. The opposite is also true; patients who show progressive improvement on isoniazid therapy may discharge bacilli that are quite virulent. Until this phenomenon is better understood, it would seem best to completely disregard it in clinical practice; every effort should be made to prevent the development of isoniazid-resistant bacilli.

In 1952, the cooperating hospitals undertook a study of the comparative efficacy of streptomycin combined with *p*-aminosalicylic acid as compared to streptomycin combined with isoniazid and to isoniazid combined with *p*-aminosalicylic acid, the streptomycin being administered twice weekly in the two regimens containing it. Preliminary data on this point compiled for the Twelfth Conference suggest that these regimens are of equal therapeutic value when efficacy is measured by serial x-ray changes and sputum conversion. As far as toxicity is concerned, nothing thus far indicates that 0.3 gm. of isoniazid daily may not be administered safely for long periods of time. Nevertheless, it must be borne in mind that sufficient data on the toxicity of polonged isoniazid administration are lacking. Possibly because of the manner in which isoniazid was introduced to the medical profession (via the newspaper), it has been too readily assumed that a combination of streptomycin and isoniazid is therapeutically superior to combined streptomycin and *p*-aminosalicylic acid. There is no evidence for this assumption.

The relative efficacy of daily administration of streptomycin and daily administration of isoniazid as compared with twice weekly administration of streptomycin and daily administration of isoniazid is not known. At the Twelfth Conference, a pilot study was drawn up to compare these regimens; this was begun in March, 1953. Studies were also begun to compare a combination of streptomycin, isoniazid, and *p*-aminosalicylic acid with regimens employing only two of these three drugs, that is, streptomycin plus isoniazid, streptomycin plus *p*-aminosalicylic acid, or isoniazid plus *p*-aminosalicylic acid.

The toxic manifestations of isoniazid are many, though few of them are important. They are said to occur in about 5% of the patients treated and to necessitate cessation of treatment in about 1%. The isopropyl derivative, iproniazid, is so much more toxic than the parent compound that it has never been available except for investigative purposes. Its use may be followed by withdrawal symptoms. The toxic manifestations mentioned subsequently are those of isoniazid and have been noted with doses of 0.15 to 0.3 gm. per day. At some point above this level, probably in the range of 0.45 to 0.6 gm., all toxic reactions can be expected to occur more frequently. The nervous system is involved most frequently, the commonest symptoms being twitching of muscles, restlessness, insomnia, and headache; hyper-reflexia can often be demonstrated. These toxic reactions disappear when the drug is withdrawn and often even if it is continued; they are rarely important enough to interfere with therapy. In some patients there are changes in temperament, at times characterized by irritability or euphoria, that are very difficult to evaluate, especially since these patients have often displayed a somewhat similar behavior before chemotherapy. These subtle changes in personality may indeed be the commonest toxic manifestations of all. A considerable number of patients experience an increase in libido and have frequent erections and nocturnal emissions. Much more important manifestations of central nervous system toxicity, but much less common, are convulsions, psychoses, and difficulty in micturition. Convulsions and psychoses are said to be more frequent in patients with organic brain damage and in those with unstable personalities.

The allergic reactions to isoniazid are not distinctive and are relatively infrequent. Desensitization by the administration of small, gradually increasing doses is said to be successful. Reports of severe reactions during isoniazid therapy are so few in number that it is impossible to attribute them with certainty to the drug. These include purpura, jaundice, and agranulocytosis. More observations on these points are needed.

At present it is agreed that isoniazid should not be used alone in the treatment of pulmonary tuberculosis, but it is not known whether streptomycin and isoniazid combined are preferable to streptomycin and *p*-aminosalicylic acid combined in the treatment of a patient who never before has received antituberculosis drugs, that is, in one whose bacilli are not resistant to any of these three drugs. The combined streptomycin and *p*-aminosalicylic acid regimen is better known and better established. The combined streptomycin and isoniazid regimen gives promise of being equally as effective as the streptomycin and *p*-aminosalicylic acid regimen, but this has not yet been clearly established. In the Veterans Administration, Army, Navy group, the 1952 pilot study comparing use of streptomycin and *p*-aminosalicylic acid, streptomycin and isoniazid, and isoniazid and *p*-aminosalicylic acid is being continued as a "basic" study; other controlled clinical studies are also in progress. It is hoped that a conclusive answer to this question will soon be forthcoming.

Oxytetracycline (Terramycin) and Viomycin.—Two derivatives of the genus Streptomyces, oxytetracycline (Terramycin) and viomycin, deserve mention as potentially valuable drugs in the treatment of tuberculosis. The antituberculosis activity of oxytetracycline, a broad-spectrum antibiotic derived from Streptomyces rimosus, was first investigated by the study units in 1950. This antibiotic inhibits the growth of tubercle bacilli in a concentration of 4 to 16 mcg. per milliliter in vitro. It is also active against tubercle bacilli resistant to streptomycin and to other tuberculostatic drugs. When streptomycin and *p*-aminosalicylic acid were the only effective antimicrobial agents available for the treatment of tuberculosis, it seemed reasonable to assess the value of oxytetracycline in limited clinical trials. The results of these trials have not been conclusive. The only enthusiastic report was that of the Fitzsimons Army Hospital; studies carried out in several Veterans Administration Hospitals were disappointing.[2a] The discrepancies in these studies in part may have resulted from the more favorable variety of clinical material in the Fitzsimons study (recently discovered lesions in young men) in addition to the much greater tolerance of their patients to oxytetracycline (7 gm. per day). This extraordinary tolerance could not be duplicated elsewhere, and, indeed, the financial expense of such therapy would appear to be prohibitive. Since the advent of isoniazid, there have been no further reports of studies on the efficacy of oxytetracycline as a sole agent in the treatment of tuberculosis. At the moment the data are incomplete, but it is probably fair to assume that for the average patient receiving average doses (2 to 3 gm. per day), its efficacy is of a low order. On the other hand, it is entirely possible that for a patient tolerating unusually high dosages the drug may be quite effective, as the experience at Fitzsimons suggests.

Probably more important than the clinical trials with oxytetracycline as the sole drug are the studies of its use in combination with streptomycin. Under these circumstances, there is ready agreement that it is effective in delaying or preventing the emergence of resistance to streptomycin—a really noteworthy contribution because of the large number of patients whose bacilli become resistant to *p*-aminosalicylic acid following therapy with that drug. The regimen consisting of 5 gm. of oxytetracycline daily and 2 gm. of streptomycin every third day, which was investigated by the Fitzsimons Group, has resulted in the preservation of sensitivity to streptomycin in every one of 15 patients whose cultures were still positive after 120 days of therapy.[2b] The regimen of 5 gm. of oxytetracycline daily and 1 gm. of streptomycin twice weekly, employed by the Veterans Administration Hospital at Dayton, Ohio, yielded approximately the same results.[2b] More recent reports from several clinics suggest that 2 gm. per day is similarly effective in this respect, and some evidence suggests that 1 gm. daily may produce the same result.

The tubercle bacilli of a large number of patients have become resistant to both streptomycin and *p*-aminosalicylic acid during successive courses of treatment with these drugs. If these patients were now treated with isoniazid, the risk of developing bacilli that are also resistant to this drug would be great, even if it were used in combination with streptomycin or *p*-aminosalicylic acid. For this group of patients, a combination of isoniazid and some other antituberculosis drug to which tubercle bacilli are still sensitive is required. It is hoped that oxytetracycline may fill this need by preserving sensitivity to isoniazid as effectively as it does to streptomycin. Studies on this point are now in progress.

Viomycin has also recently become available for clinical use. This antibiotic, derived from Streptomyces puniceus and Streptomyces floridae, is active in vitro against both streptomycin-sensitive and streptomycin-resistant bacilli in concentrations of 2.5 to 12.5 mcg. per milliliter. Tubercle bacilli become resistant to viomycin in vitro and in patients treated with it. In experimental animals, it is approximately 25% as effective as streptomycin in equivalent dosage.[5]

The first clinical trials of viomycin were carried out with a dosage approximating 50 mg. per kilogram of body weight (2.5 to 3.5 gm. per day). In these trials,[6] the therapeutic efficacy of the drug was appreciable though it seemed definitely inferior to streptomycin. It is difficult to make such a quantitative comparison between the two drugs with any precision, especially since, within the ranges tolerated by human beings, the efficacy of viomycin appears to be more a function of dosage than it is with streptomycin. Patients who tolerate 3 gm. per day have often showed striking improvement of pulmonary and extrapulmonary lesions; however, this dosage causes serious toxic reactions, chiefly albuminuria, azotemia, hypokalemia, and hearing loss that may be sudden and complete. Patients who do tolerate this dose of the drug often require a prohibitive amount of laboratory work for detection and control of toxic manifestations.

Because of its toxicity, recent clinical studies have been carried out with a regimen of 2 gm. of viomycin twice weekly and 12 gm. of *p*-aminosalicylic acid daily, a considerable reduction in dosage as compared to the first trials. At this dosage,[2b,c] the toxicity is sharply reduced and yet the difference is quantitative; all toxic manifestations observed with the higher dosages continue to occur and should be anticipated. The therapeutic efficacy of this regimen is moderate, but it is not yet possible to know what may be expected of it in terms of the significant therapeutic goals in pulmonary tuberculosis, that is, sputum conversion and cavity closure, nor has its preoperative prophylactic value been defined. A large number of patients have been treated with this regimen in both Veterans Administration and non-Veterans Administration hospitals. An analysis of these data will be available soon. At present the place of viomycin among the antituberculosis drugs is uncertain. Because of its limited efficacy and toxicity, it is evident that viomycin seldom will be the drug of choice. As is the fate of less effective drugs, it will probably be used in the treatment of those patients whose bacilli have become resistant to streptomycin or isoniazid. For such use, it will probably be of value, but it should be used in the proper setting, with facilities for careful laboratory control of toxicity.

Amithiozone (Tibione), Pyrazinamide (Aldinamide), and Certain Antibiotics.—The position of amithiozone (Tibione), one of the thiosemicarbizones, among antituberculosis drugs has now been clearly defined; its efficacy, though often discernible, is not usually sufficient to alter the patient's therapeutic problem or contribute significantly to his recovery. According to most investigators, its efficacy is approximately that of *p*-aminosalicylic acid. At the present time there appears to be no place for the thiosemicarbizones in the treatment of pulmonary tuberculosis except possibly as a last resort in patients who have failed utterly to respond to all other antituberculosis drugs. Whether or not the thiosemicarbizones should be administered in combination with other drugs is doubtful. The matter has not been studied sufficiently; the data are conflicting.

Some reports indicate that amithiozone may be of benefit in lesions of the mucous membrane; patients whose bacilli were resistant to streptomycin have experienced significant relief of laryngeal lesions and tuberculous enteritis. The drug is worth remembering for this indication alone.

The clinical usefulness of the thiosemicarbizones is limited by their toxicity; in experimental tuberculosis, excellent therapeutic results have been obtained with dosages that would be equivalent to 3 gm. per day in man, but amounts of that order are absolutely precluded by toxicity. Dosages of 0.1 to 0.2 gm. per day are well tolerated. In this range toxicity is minimal and reversible when it occurs. Larger doses (0.2 to 0.8 gm. per day) are probably not significantly more effective and are considerably more toxic.

Pyrazinamide (Aldinamide), a synthetic derivative of nicotinic acid, was first used in tuberculosis in clinical trials in 1949. In the few studies that have been made with it, the immediate therapeutic effect of the drug is frequently striking. Many patients experience an abrupt defervescence and, often, pronounced symptomatic improvement.[7] Roentgenograms reveal appreciable and sometimes almost complete resolution of lesions. Laryngeal and palatal lesions have healed in several instances. Its value, however, appears to be limited to recent cases with fresh, exudative lesions, and its effectiveness even in these favorable cases is short lived. This loss of efficacy is ascribed to the rapid development of bacterial resistance—a point, however, that should not interfere with its usefulness as a prophylactic agent in thoracic surgery. Toxic manifestations noted in patients treated with 2.8 gm. per day consist of nausea, vomiting, arthralgia, fever, nervousness, and jaundice. These are reversible on withdrawal of the drug.

A brief experience with pyrazinamide has not impressed the investigators in the cooperating hospitals, although a few of them believe that its study should be continued. This attitude can be readily understood, for it is difficult to abandon entirely a drug that often gives striking relief, even though briefly, to patients with acute disease. No doubt the study of pyrazinamide on a larger scale would be desirable, but the presence of much more powerful competitors in the field makes this course improbable at the moment.

A host of other synthetic chemical compounds—most of them modifications of isoniazid—are receiving extensive laboratory trials; some are already receiving clinical trials, but none are sufficiently developed to deserve mention at this time. Their stature probably will be that of secondary weapons—substitutes for streptomycin and isoniazid when tubercle bacilli become resistant to these drugs.

Three antibiotics, in addition to those already mentioned, have been discussed at the conferences but have not succeeded in holding attention. Neomycin,[2a] an admirable performer in the laboratory, exerts too toxic an effect upon the kidney and the auditory branch of the eighth cranial nerve to justify its clinical use except possibly as a local application (such as for tuberculous cystitis). Mycomycin,[2a,b] finally obtained after heroic efforts to stabilize it, proved practically inactive in the treatment of tuberculous guinea pigs. Erythromycin has received a small-scale clinical trial and, as might have been anticipated from in vitro studies, was found to be ineffective.[2c]

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[5] Steenken, W., Jr., and Wolinsky, E.: Viomycin in Experimental Tuberculosis, Am. Rev. Tuberc. 63: 30 (Jan.) 1951.

[6] Werner, C. A.; Tompsett, R.; Muschenheim, C., and McDermott, W.: Toxicity of Viomycin in Humans, Am. Rev. Tuberc. 63: 49 (Jan.) 1951. Footnote 2a.

[7] Yeager, R. L.; Munroe, W. G. C., and Dessau, F. I.: Pyrazinamide (Aldinamide) in the Treatment of Pulmonary Tuberculosis, Am. Rev. Tuberc. 65: 523 (May) 1952.

OTHER ASPECTS OF CHEMOTHERAPY

Optimum Duration.—The chronicity of tuberculosis and the frequency with which necrotic lesions are present suggest that long periods of bacterial suppression are required before lasting healing can be expected. Certainly this is true as long as the available chemotherapeutic agents merely inhibit the growth of tubercle bacilli rather than directly destroy them. The present group of antituberculosis drugs are tuberculostatic rather than tuberculocidal, and the optimum duration of chemotherapy must be discussed with this point in mind.

The earliest studies of streptomycin pointed to the development of streptomycin-resistant bacilli as the major obstacle to effective, prolonged chemotherapy. Once resistant bacilli appeared, further therapy was usually without benefit and relapses were frequent. This was changed by administering streptomycin in combination with *p*-aminosalicylic acid. The addition of *p*-aminosalicylic acid to the regimen has significantly delayed or even suppressed the emergence of streptomycin-resistant bacilli, and this has made prolonged streptomycin therapy possible. In 1949, at the Eighth Conference, the report of a pilot study conducted by a single hospital suggested the superior effectiveness of prolonged streptomycin and *p*-aminosalicylic acid therapy over the 120-day regimens then in use.[8] In 1950, at the Ninth Conference, the principle of prolonged chemotherapy was incorporated into the basic regimens that were to be used by all cooperating hospitals.

In the protocols agreed upon at this time, however, the duration of a course of combined streptomycin and *p*-aminosalicylic acid therapy for the individual patient was left to the judgment of the investigator—it might be 4, 8, 12 or more months. The investigators were aware that in more advanced cases or those presenting difficult therapeutic problems treatment would be continued longer than in the more favorable cases and that, if the severity of the disease were not taken into account, it might appear that prolonged therapy was actually less effective than the shorter courses. Clearly, a controlled study was needed. Yet it never seemed wise to institute a strictly controlled study in which cases would be allocated at random at the start of chemotherapy. If this were done, a patient with minimal tuberculosis, for example, might fall by chance in the group to be treated for one year, while a patient with advanced disease might be treated for only four months. Studies on the duration of chemotherapy were discussed at successive conferences, but only at the most recent, in February, 1953, was a protocol for a pilot study on this subject proposed and accepted by the cooperating hospitals. The objection of allocating cases of varying severity at random was overcome by delaying selection until each case had attained a well-defined therapeutic goal. In the protocol recently adopted, this goal, the "therapeutic target point," consists of three parts: (1) the stability of lesions on serial roentgenograms, (2) the closure of all cavities, and (3) the finding of consistently negative cultures. When the target point is reached, whether by chemotherapy alone or by chemotherapy aided by adjuvant therapy (such as collapse or resection), random allocation in respect to the duration of chemotherapy is put into effect.

In order that the bacteriology and pathology of lesions at the time the target point is reached may be appreciated, the evolution of lesions during chemotherapy will be discussed briefly. The rapid clearing of x-ray shadows during the first three or four months of therapy represents chiefly the resolution of non-necrotic lesions. Further resolution then proceeds more slowly as chemotherapy is continued beyond the fourth or sixth month. Occasionally, steady resolution occurs throughout the entire first year of chemotherapy and even into the second year. At some time, varying widely in different cases, stability is reached and roentgenograms no longer show changes for the better. At this point of maximal resolution, most of the shadows that persist on the roentgenogram represent residual, necrotic lesions rather than scars.[2a] This fact cannot be overemphasized. These lesions are frequently encapsulated necrotic foci that never liquified and drained, and often they are cavities filled with necrotic debris.

The behavior of cavities during chemotherapy is probably the most important single criterion of the efficacy of a drug regimen. During the first several months of chemotherapy, cavities become reduced in size and small ones may close (or, rather, fill in). In general, however, closure of cavities lags behind the resolution of non-necrotic lesions. This lag was easily apparent during the 120 day courses of chemotherapy employed in our study prior to 1950; here the resolution of non-necrotic lesions was often pronounced, while the effect on cavities was meager. The infrequency of cavity closure led to the conclusion that chemotherapy had a beneficial effect upon "exudative disease" (non-necrotic) but not upon caseous lesions. During the relatively short courses of streptomycin therapy employed in those days, cavities often showed progressive reduction in size until such time as bacterial resistance was found in vitro, whereupon they frequently enlarged again. The impression was that some cavities would have closed completely if bacterial resistance had not supervened. This is precisely what does occur during prolonged therapy with combined streptomycin and *p*-aminosalicylic acid. A considerable number of cavities up to 6 cm. in diameter do close during chemotherapy without the aid of collapse measures. Most of the ones that close do so during the first six months; those that are still open at the sixth month require either collapse or resection to effect their closure or elimination.

The bacteriological changes during prolonged chemotherapy make up the third criterion of the therapeutic target point. In patients receiving combined streptomycin and *p*-aminosalicylic acid daily, approximately 75% have negative cultures at the end of the fourth month of their first course of uninterrupted therapy. Whether or not cultures will remain negative as chemotherapy is continued depends almost exclusively on the fate of cavities in each case. Some generalizations of great clinical usefulness are as follows: 1. If cavities do not close (or fill in), cultures will often become positive again even though chemotherapy is continued uninterruptedly; conversely, if cavities do close, cultures remain negative. 2. If cultures have not been rendered negative by the fourth month (a circumstance that is not known to the clinician until the sixth month because of the time-consuming nature of the test), there is little hope of their becoming negative solely by a continuation of chemotherapy. 3. Cultures that are still positive by the sixth month usually consist of bacilli that are resistant to streptomycin, though frequently they have retained their sensitivity to *p*-aminosalicylic acid. This is more likely to be true when a regimen of daily administration of streptomycin and *p*-aminosalicylic acid is employed, in contrast to 1 gm. of streptomycin twice weekly and daily *p*-aminosalicylic acid.

The target point is reached with the successful accomplishment of (1) stability of lesions (the maximum resolution of non-necrotic lesions present at the onset of chemotherapy and the formation of no new ones), (2) the closure of all cavities, and (3) the elimination of tubercle bacilli from the sputum. Clinical experience has shown that the termination of chemotherapy before the target point is reached is unwise, since relapse often follows. How much more chemotherapy is necessary after the target point has been reached is not known. The study on the optimum duration of chemotherapy will attempt to answer this question. Only the cases that reach the target point will be allocated at random for studies on duration of chemotherapy. One group will receive chemotherapy for three months after the target point has been reached, another for six months, and the third for nine months thereafter.

In the absence of precise knowledge regarding optimum duration of chemotherapy, it is believed at present that the minimum period of treatment should be 12 months, or 4 to 6 months after certain goals more or less comparable to the target point are reached. Throughout this long period it is generally agreed that treatment should not be interrupted—there must be no short courses with "rest periods" in between, because resistant bacilli may make their appearance and such a situation cannot be reversed by a resumption of therapy with the same drugs.

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[8] D'Esopo, N. D.: Prolonged Chemotherapy of Pulmonary Tuberculosis, Minutes of the Eighth Streptomycin Conference, Veterans Administration, Washington, D. C., Nov., 1949.

Bacteriology of Closed Necrotic Lesions.—An inquiry into the viability of tubercle bacilli in necrotic lesions that are resected during the course of prolonged chemotherapy has been one of the most significant recent developments in the cooperative study.[2b] The question was raised as a result of certain bacteriological studies performed during prolonged therapy with streptomycin and *p*-aminosalicylic acid combined. In a number of these cases, residual lesions resected by the wedge technique were found to be either encapsulated necrotic foci or filled-in cavities. The necrotic lesions—and especially the filled-in cavities—contained myriads of tubercle bacilli visible on stained smears, but efforts to culture them were successful in only 10 to 15% of cases. These findings have now received wide confirmation.[2c]

It should be emphasized that these apparently nonviable bacilli are found in the "closed" necrotic lesions, best illustrated by the filled-in cavity. It is usually possible, on the contrary, to culture bacilli from air-containing cavities even after extensive chemotherapy.

The inability to cultivate viable bacilli from closed necrotic lesions or to produce tuberculous infection with them in susceptible laboratory animals has raised the question of their viability. In the opinion of some bacteriologists, no evidence for nonviability has been presented[2c]; the inability of organisms to reproduce, they say, does not necessarily mean that they are dead. They believe that the bacilli have been modified in some way by chemicals (such as fatty acids or spermine) in the closed lesion or by chemotherapy and may now require special techniques, still to be devised, in order to demonstrate their viability. Other bacteriologists are certain that these bacilli are dead.

The subject has stimulated a great deal of investigation in a rather old field.[9] Lesions have now been resected without having been subjected to chemotherapy, with essentially the same findings, provided, again, the lesions are closed.[2c] It is clear, therefore, that chemotherapy is not a prerequisite for this phenomenon. That bacilli die in closed necrotic lesions under natural conditions has long been known. The consistency with which nonviable bacilli are found in closed necrotic lesions during chemotherapy suggests—but only suggests—that chemotherapy is something more than an instrument in bringing about the "closed" state and that the drugs may have an active role in the death of bacilli—assuming that they are dead.

The possibility that bacilli may not survive in necrotic lesions has raised many practical problems in the use of chemotherapy, such as whether closed necrotic lesions should be resected if bacilli do die in them. The pathologist might state that these lesions are not healed and that morphologically they are potentially dangerous, since careful dissection often reveals debris-filled communicating bronchi that might easily serve as the pathway for a future relapse. In fact, such morphological features, especially the frequency of bronchial communications, were the rationale for resecting these lesions in the first place. Clinicians interpret these bacteriological data in various ways. Some are persuaded that the bacilli are dead; therefore they see no indication to resect such lesions simply because they are necrotic. Others are more impressed with the necrotic features of the lesions and, fearing that the bacilli merely appear dead, advocate resection. Still others are inclined to advise resection for the larger residual necrotic lesions but agree to allow small lesions to go unresected.

The best clinical application of these exciting bacteriological data is not known. At the Twelfth Conference, steps were taken toward designing controlled studies in order to learn how residual necrotic lesions should best be treated. Until such studies are completed, the decision to resect or not to resect will have to be made in a great many cases without precise knowledge of the natural fate of these lesions. These decisions should be a joint effort of physicians and surgeons, as such a team is in the best position to deal with factors of which the significance is now unknown. These factors are the number, size, and location of residual necrotic lesions and certain details of chemotherapy—the very factors, in short, that controlled studies are designed to clarify.

Chemotherapy and Surgery.—The relationships between chemotherapy and the surgery of pulmonary tuberculosis have undergone important changes since the introduction of prolonged combined regimens. The short courses of drug therapy (42 to 120 days) in use from 1946 to 1949 were principally of prophylactic value insofar as thoracic surgery was concerned. They were designed to help the patient through an acute phase of his disease or to prevent the complications of surgical procedures. In serving these ends, they were moderately successful. The timing of chemotherapy and surgery was of the greatest importance at that time, since bacterial resistance occurred quickly and much could be lost by delaying surgery too long. The prolonged combined regimens have increased the period of effective preoperative chemotherapy; thus, the timing of chemotherapy and surgery need not be planned as meticulously as formerly. This is especially true during the first six months of chemotherapy in previously untreated patients since relapses are few and the development of bacterial resistance is unusual during this period.

Prolonged chemotherapy has also given new indications for certain surgical procedures. Thus, chemotherapy may be used for long periods of time to heal the non-necrotic component of the disease, after which the residual necrotic lesions may be resected. This seems to be a reasonable approach. Some physicians, however, believe that portions of the lung that are heavily involved cannot be restored to functional integrity by chemotherapy and had best be resected. They contend that such lesions can be resected in the early weeks during a course of chemotherapy with very little risk, and at a great saving of time for the patient. Others believe that these portions of lung tissue are worth saving and that the resection of residual necrotic lesions after prolonged chemotherapy is the more conservative procedure. The point is yet to be settled.

The lessened importance of the timing between chemotherapy and surgery is not applicable to all cases. In patients whose cavities do not close during chemotherapy, the timing of the surgical procedure continues to be a matter of the greatest importance. It should be performed without further delay if experience suggests that the cavities will not close with further chemotherapy.

A large mass of statistical data bearing on chemotherapy and surgery was collected from 50 hospitals for the Twelfth Conference. The data showed that combined streptomycin and *p*-aminosalicylic acid therapy is better than streptomycin alone in affording protection against complications in thoracic surgery, that an original course of therapy is more effective than re-treatment, and that complications increase as the magnitude of the surgical procedure increases. (Complications are more numerous after lobectomy than after segmental resection and more numerous after pneumonectomy than after lobectomy.)

Since 1946, the use of chemotherapy with regard to surgery has gone through several phases and continues to change. Originally the emphasis was upon protection for thoracic surgery. Recently, the prolonged regimens have enabled more patients to become candidates for procedures such as lobectomy and segmental resection, very probably with a lower incidence of complications. Still more recently, surgery has been used to remove what chemotherapy cannot heal. The point has now been reached where the necessity for resecting closed necrotic lesions is open to question. It is quite possible that the time may be approaching when chemotherapy will be definitive therapy in many cases in which it was previously only a preparation for surgical procedures.

Chemotherapy in Tuberculous Meningitis and Miliary and Renal Tuberculosis.—In the early days of the cooperative study, the whole gamut of tuberculosis was studied, with a different protocol for every type of the disease from sinusitus

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to pericarditis. A good deal of useful data were gathered. Most of these studies have been discontinued, partly because the knowledge that was sought has been gained, but chiefly because the drug regimen that is superior in one situation is equally superior in the other. Pulmonary tuberculosis was chosen for investigation because of its frequency, although meningitis has special investigative advantages, and superficial lesions of the mucous or serous membranes respond more readily to chemotherapy than do parenchymatous lesions. For example, tuberculous laryngitis, formerly an agonizing experience for both patient and physician, may even be healed by amithiozone, which is regarded as a third-class drug for pulmonary tuberculosis. By and large, the virtues and frailties of the regimens that have been discussed in this report are as applicable to extrapulmonary as they are to the pulmonary tuberculosis. In two instances, however, meningeal and genitourinary tuberculosis, a continuing study of extrapulmonary tuberculosis has seemed desirable.

Tuberculous meningitis (and with it, for purposes of present convenience, acute disseminated miliary tuberculosis) is, in theory, the ideal testing ground for an antituberculosis drug because, prior to chemotherapy, it had a mortality rate of 100%. If even a single patient survived therapy, it became certain that the drug used was an effective antituberculosis agent.

Between April, 1946, and May, 1947, 100 patients with meningeal or miliary tuberculosis, either alone or in combination, were treated with streptomycin alone in Veterans Administration Hospitals. A five year follow-up on this series is now available. Five of 47 patients (11%) with meningitis are alive (with 7% "entirely well"). Nine of 19 patients (47%) with miliary tuberculosis are alive (with 37% "entirely well"). The results in this first series were spectacular at the time (37% of the meningitis patients were alive 4 to 14 months after the initiation of therapy), but they were not nearly as spectacular as subsequent reports, particularly those from Europe. The details of chemotherapy varied in the different series (in one series, thiazolsulfone was added), but the most obvious difference was that our case material consisted entirely of adults whereas the others consisted almost entirely of children. That difference may or may not contain the explanation.

Since the 1946-1947 series, the survival rates have gradually improved in these groups of patients in our cooperative study, but a striking and definite change occurred only when *p*-aminosalicylic acid was used in combination with streptomycin (or dihydrostreptomycin). In view of the low regard in which members of the conferences hold the therapeutic efficacy of *p*-aminosalicylic acid, this consequence was surprising. In the 600 odd cases reported to the Twelfth Conference, the three year survival rate in tuberculous meningitis among patients receiving this combined therapy had risen to approximately 50% and, in miliary tuberculosis, to approximately 80%.[2c] The addition of isoniazid to the armamentarium may be of further assistance. It has already been shown to be effective in the treatment of meningitis and, although the small series of cases (13) reported upon did nothing more than strengthen that belief, it was urged that it be incorporated with its two predecessors in the treatment of future cases. Because of the imminent hazard of meningitis, the members of the conferences have not felt justified in recommending that cases be allocated at random for different regimens. The members of the conferences have long and strongly supported the desirability of administering streptomycin by both intrathecal and intramuscular routes and are now well convinced that the former technique is unnecessary. There is firm agreement, which seems unlikely to change, that chemotherapy should be continued for at least 12 months. The intrathecal or intraventricular injection of tuberculin has not been attempted by the cooperating hospitals.

The results of chemotherapy in 545 cases of genitourinary tuberculosis treated in the seven years since 1946 were also reported to the Twelfth Conference. The descriptions of many of the earlier cases were incomplete, and random allocation had been inadequate or not attempted. Nevertheless, accepting the conversion of urine from positive to negative as the criterion of effective therapy, certain general conclusions can be drawn that are remarkably analagous to those described in meningitis. Patients receiving courses of streptomycin alone for the relatively short period of four months showed a conversion rate of less than 20% in the presence of medium or large-size renal lesions at the time of a five year follow-up examination. When *p*-aminosalicylic acid was added to streptomycin, and to a still greater extent when the duration of treatment was extended to 12 months, the conversion rate increased to 80% in the presence of similar lesions two years after the beginning of therapy. Whether this impressive figure will be maintained during more prolonged periods of observation remains to be seen. Preliminary evidence of the effectiveness of isoniazid is encouraging, and there is little or no indication of renal toxicity. A combination of streptomycin and isoniazid was agreed upon as the regimen of choice for the calendar year 1953. Nephrectomy (or, under certain circumstances, partial resection), in addition to chemotherapy, is still regarded as the procedure of choice in the presence of extensive unilateral renal involvement.

Other Projected Studies.—Two subjects proposed at the Twelfth Conference as appropriate for future investigation, a controlled study of residual necrotic lesions and the duration of chemotherapy, have already been touched upon. Other studies to be undertaken are concerned with the value of pneumoperitoneum in the treatment of patients receiving prolonged chemotherapy and the need for rest during chemotherapy.

The study concerned with pneumoperitoneum is an inquiry into the possible advantages of adding this form of collapse in the treatment of cavitary disease. When chemotherapy consisted of short courses of 42 to 120 days, the value of collapse therapy could scarcely be questioned. Indeed chemotherapy and collapse therapy seemed to supplement each other; the former was directed toward the healing of nonnecrotic lesions and the latter toward the closure of cavities. Prolonged chemotherapy, however, frequently brings about the closure of cavities without the aid of collapse measures. What, then, are the present indications for pneumoperitoneum? Is the size of the cavity a determining factor in the decision? Will cavities close more rapidly if treated with both types of therapy simultaneously? These are some of the questions the study seeks to answer.

The projected study of rest represents a wide departure from the traditional attitude towards this best-established mode of tuberculosis therapy. The impetus of this study is the success of the prolonged chemotherapy regimens and the hope that they will, by themselves, prove to be definitive. Patients in this study are to be highly selected. Patients with advanced disease and those who have previously received any form of chemotherapy for tuberculosis are to be excluded. One group in the study will receive prolonged chemotherapy along with the amount of rest customary in the hospital concerned; a second group, in other hospitals, will receive prolonged chemotherapy along with as much rest as is indicated by each patient's symptomatology.

The studies of rest, resection, and pneumoperitoneum that have been outlined are a search for the indications for definitive chemotherapy. If this goal appears strange, it is probably because it has been said too often that tuberculosis cannot be cured by drugs alone, that rest is indispensable for the treatment of tuberculosis under any circumstances, that cavitary disease requires some kind of collapse-therapy, or that tuberculosis cannot be considered healed as long as necrotic lesions persist. These generalities are undoubtedly valid for a great many cases of tuberculosis; for some, however, they seem to be no longer true. We must learn to identify these cases.

SUMMARY

The present report reviews the position of the major chemotherapeutic agents now used in the treatment of tuberculosis, especially the relative merits of streptomycin, *p*-aminosalicylic acid, and isoniazid. It includes, also, a few brief remarks on several lesser drugs, such as viomycin, oxytetracycline (Terramycin), and pyrazinamide (Aldinamide). About half of the report deals with the use of antituberculosis agents in a general sense. It discusses problems relating to the optimum duration of chemotherapy together with the protocol designed

by the Twelfth Conference on the Chemotherapy of Tuberculosis to study this point. The report also reviews the recent data concerning the viability of tubercle bacilli in closed necrotic lesions and discusses the significance of this fact in clinical practice. There is a brief section on the integration of chemotherapy and surgery. Two extrapulmonary tuberculous lesions, tuberculous meningitis and miliary renal tuberculosis, are briefly reviewed in the light of data submitted to the Twelfth Conference. Finally, two projected studies dealing with the integration of pneumoperitoneum in chemotherapy and of bed rest and chemotherapy are briefly mentioned.

COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

APPARATUS ACCEPTED

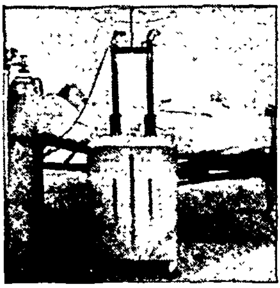
The following additional products have been accepted as conforming to the rules of the Council on Physical Medicine and Rehabilitation of the American Medical Association for inclusion in Apparatus Accepted. A copy of the rules on which the Council bases its action will be sent on application.

RALPH E. DE FOREST, M.D., *Secretary.*

Resp-Aid Iceless Oxygen Tent, Model 200

Respiration Aids, Inc., 424 E. 123rd St., New York 35.

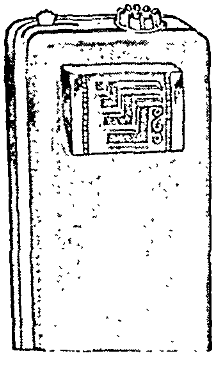
The Resp-Aid Iceless Oxygen Tent is an apparatus for administering oxygen, which has been electrically temperature-conditioned, to a patient in bed. The apparatus includes a transparent canopy that covers the patient, and a cabinet that contains the machinery. It can be wheeled to the bedside on casters. The motor requires 60 cycle alternating current at 115 volts and draws 700 watts.



Resp-Aid Iceless Oxygen Tent, Model 200

Crated for shipment, the apparatus measures 103 by 60 by 70 cm. (40½ by 23½ by 26½ in.) and weighs 123 kg. (270 lb.). Unpacked, the cabinet containing the motor measures 159 (height including superstructure) by 41 by 59 cm. (53 by 16 by 23 in.) and weighs 87 kg. (190 lb.).

Evidence from sources acceptable to the Council showed that this apparatus was well made and gave good service.



Telex Hearing Aid, Model 952

Telex Hearing Aid, Model 952

Telex, Inc., Telex Park, St. Paul 1.

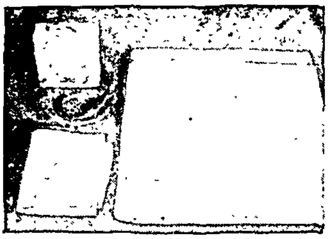
The Telex Hearing Aid, Model 952, is also called Super-Telex. It contains five vacuum tubes and requires two A-batteries (1.5 volt mercury cells) and one B-battery (45 volts). The body of the instrument measures 115 by 55 by 20 mm. and weighs 151 gm. In addition, the three batteries weigh a total of 100 gm., the receiver cord 3 gm., and the receiver 8 gm.

Evidence of satisfactory construction and performance, both for air and bone conduction, was obtained from sources acceptable to the Council.

S. & L. Enuresis Alarm, Model D

S. & L. Signal Company, 525 Holly Ave., Madison 5, Wis.

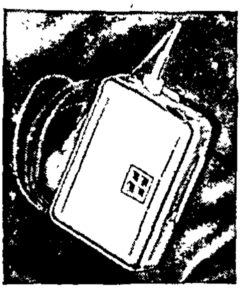
The S. & L. Enuresis Alarm is an electric device that sounds an electric bell when the bed pad is wet by a patient. It consists essentially of two parts: (1) a control box containing a 22.5 and a 6 volt battery and a bell and (2) a bed pad consisting of two rectangular bronze wire screens separated by a layer of cloth. These two parts are connected to the control box by a cable. The bronze screens measure 56 by 61 cm. (22 by 24 in.), and when the cloth between them is wet by a conducting fluid a sufficient current flows to set off the alarm. The alarm rings until it is switched off by the user.



S. & L. Enuresis Alarm, Model D

Packed for shipment the entire unit measures 20.3 by 61 by 33 cm. (8 by 24 by 13 in.) and weighs 5.9 kg. (13 lb.).

The Council obtained evidence that this device was helpful when used under medical supervision in cases of enuresis not attributable to physical disease.



Otarion Hearing Aid, Model C-15

Otarion Hearing Aid, Model C-15

Otarion, Inc., 4757 N. Ravenswood Ave., Chicago 40.

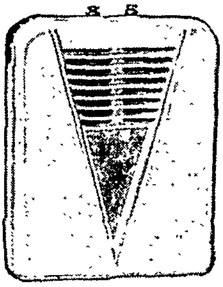
The Otarion Hearing Aid, Model C-15, incorporates one transistor with two vacuum tubes. It requires one mercury type 1.5 volt A-battery and one 15 volt B-battery. The body of the instrument measures 63 by 45 by 23 mm. and weighs 70 gm. The receiver, receiver cord, and two batteries bring the total weight to 108 gm.

Acousticon Hearing Aid, Model A-17

Dictograph Products Inc., 95-25 149th St., Jamaica 35, Long Island, N. Y.

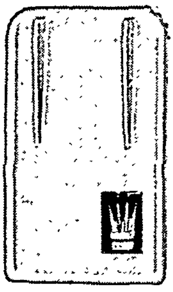
The Acousticon Hearing Aid, Model A-17, incorporates three vacuum tubes and requires one 1.5 volt A-battery and one 15 volt B-battery. It can be used with any one of 10 air earphones and 3 bone receivers, adjusted for different acoustic responses.

The body of the instrument, disregarding minor projections, measures 82 by 65 by 22 cm. and weighs 76.5 gm. With clip attachment, receiver, receiver cord, and batteries, it weighs 132.5 gm.



Acousticon Hearing Aid, Model A-17

Acousticon Hearing Aid, Model A-185



Acousticon Hearing Aid, Model A-185

Dictograph Products Inc., 95-25 149th St., Jamaica 35, Long Island, N. Y.

The Acousticon Hearing Aid, Model A-185, incorporates three vacuum tubes and requires one 1.3 volt A-battery and one 30 volt B-battery. It can be used with any one of 10 air earphones and 3 bone receivers, adjusted for different acoustic responses.

The body of the instrument, disregarding minor projections, measures 77 by 45 by 22 mm. and weighs 73 gm. With receiver, receiver cord, and batteries, the total weight is 125 gm.

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VITAMIN A IN LIVER CELLS

Although the indispensability of vitamin A in the diet has long been accepted, the precise mode of its action in the organism still remains to be demonstrated. To be sure, distortion of normal histogenesis and widespread metaplasia are recognized as more or less characteristic sequelae of the deficiency of this food factor; yet detailed information with respect to its influence on the chemistry of cellular processes is not available. There are, however, facts about vitamin A that will ultimately contribute to a better understanding of the mechanism of its action.

Inasmuch as the vitamin has the chemical structure of an alcohol, its existence in liver oil partially as an ester[1] might be expected; in one study[2] after experimental animals had been fed a concentrate of fish liver oil containing almost all the vitamin in the ester form, the vitamin A was largely present in the intestinal mucosa in the alcohol form, indicating that the original ester form had been hydrolyzed by the fat-splitting enzyme of the intestine much as is any food fat. Studies[3] with chicken, cow, and pig blood indicate that once vitamin A has been absorbed into the circulation both the alcohol and the ester forms are present but that each is associated with a different fraction of the plasma proteins. That there is a change in the form of vitamin A as it is secreted with milk fat is shown by the fact that in both colostrum and milk the ester form predominates.[4]

The liver is recognized as the main storehouse of vitamin A in the body. It was early shown that, in animals fatally poisoned with phosphorus, there was little if any diminution of vitamin A in the damaged liver, which suggests that the Kupfer cells may take over the vitamin-storing function of the hepatic cells.[5] A similar reciprocal function of these two kinds of liver cells was observed during hypervitaminosis in studies in which the fluorescent microscope was used.[6]

Recently, a closer approach to the localization of vitamin A in the cell was made through the fractional centrifugation of liver cell homogenates; by this device a soluble portion is separated from the cell solids and then the latter are further fractionated into the nuclear part, the mitochondria and the microsomes. In one such experiment,[7] vitamin A (undifferentiated) was found largely in the soluble part, with the mitochondrial fraction of the solids containing most of the remainder. More recently, with similar techniques but with the vitamin A partitioned into ester and alcohol fractions, it was found[8] that the ester form is preponderate in the hepatic cell and that this is largely in the "cream" layer of the nonsolids fraction. Of the alcohol form, about two-thirds is in the "cream" layer and the rest divided between the remaining supernatant and the microsomes. The difference in distribution of the ester and the alcohol form of the vitamin may be due to the demonstrated association of each with different proteins within the cell.

The available data on the distribution of vitamin A within the tissue cells are somewhat conflicting in detail, owing largely to the imperfections of the chemical and cytological techniques involved. It may be expected, however, that in the future such studies will be extended, with more technical skill, to other nutrients and therapeutic agents and to other tissue cell types, with a consequent better understanding of many disease processes.

ACQUIRED AFIBRINOGENEMIA IN PREGNANCY

Severe uncontrollable hemorrhage associated with nonclotting of the blood is a dreaded complication of certain obstetric conditions, particularly premature separation of the normally implanted placenta. Attention was first drawn to this condition in 1901 by DeLee, who described it as a temporary hemophilia. Since then, various investigators have sought to determine the nature of the coagulation defect. In 1915, Williams likened the hemorrhagic lesions in abruptio placentae to those seen after poisoning by certain varieties of snakes and suggested that a toxic substance circulating in the blood led to changes in the vessels that permitted escape of blood into the tissues. Willson in 1922 suggested that in abruptio placentae there was liberation from the placenta of a hemorrhagic toxin that exerted its maximal effect locally in the form of retroplacental bleeding and thus led to the placental separation. He further suggested that, when this toxin was absorbed into the maternal circula-

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tion, general toxemia and, on occasion, severe hemorrhage would result.

A fresh approach was provided by Dieckmann, who, in 1936, found that the blood fibrinogen levels were greatly reduced in patients who hemorrhaged after abruptio placentae.[1] Dieckmann's observations have been amply confirmed by subsequent investigators,[2] and various hypotheses have been advanced to explain this reduction of blood fibrinogen despite adequate hepatic function. Dieckmann thought that the reduction was due to the mobilization of fibrin at the site of the placental separation. Moloney, Egan, and Gorman, on the other hand, attributed the afibrinogenemia to the presence of a fibrinolysin.[2a] Other investigators, such as Schneider,[3] Page and his associates,[2d] and Reid and co-workers,[4] have presented what in the light of present knowledge is probably the most plausible explanation. These investigators point out that thromboplastin or a thromboplastin-like material has been shown to exist in placental tissue and in amniotic fluid. They postulate that under certain conditions enough of this thromboplastic substance may be forced into the maternal circulation to bring about a conversion of the fibrinogen to fibrin, which in turn is deposited on the walls of the blood vessels as fibrin thrombi. This concept gains support from reports that injection of placenta extracts or of thromboplastin into animals leads to defibrination of the blood, as well as increased clotting time and extensive vascular fibrin deposits. It has been suggested that in abruptio placentae the increased intrauterine pressure occasioned by the retroplacental clot favors the entrance of amniotic fluid into the maternal circulation. This would explain why hemorrhagic difficulties are not seen when the retroplacental clot is small, why the process of defibrination is arrested after artificial rupture of the membranes, and why afibrinogenemia is not seen in placenta previa, when the blood can escape freely through the cervical os.

While most attention has been focused on the coagulation defect occurring in abruptio placentae, there is evidence to indicate a similar sequence of events in certain other conditions, particularly in long-standing intrauterine fetal death[5] and in the so-called syndrome of amniotic fluid embolism.[6] In the former, Reid and his associates suggest that placental autolysis results in a high concentration of thromboplastic material, which may enter the maternal circulation under the impetus of uterine contractions. In the later instance, they suggest entry of amniotic fluid with its defibrinating material is favored by tumultous contractions such as may follow the administration of posterior pituitary preparations. These investigators believe that the severe manifestations of this condition may be related to intravascular clotting and to uncontrollable bleeding subsequent to defibrination rather than to embolic effects of the particulate matter of the amniotic fluid infusions and an associated anaphylactoid reaction, as postulated by Steiner and Lushbaugh.[7]

Recognition of the presence of acquired afibrinogenemia permits a rational approach to the therapy of uncontrollable bleeding in pregnancy, and numerous investigators have attested to the value of fibrinogen or of massive whole blood transfusions in restoring the clotting mechanism.[8] In the severer cases of abruptio placentae Reid considers that restoration of the clotting ability of the blood should precede any surgical attempt at delivery other than rupture of the membranes. In the syndrome of amniotic fluid embolism, restoration of the blood fibrinogen offers a therapeutic approach to a condition previously considered hopeless. In cases of long-standing fetal death, it is suggested that periodic studies of the blood be undertaken so that, if alterations in the clotting mechanism are encountered, prompt hospitalization and suitable treatment may be instituted without delay.

ACCIDENTS IN CHILDREN

A notable decrease in infant mortality and in the death rate from childhood diseases has been brought about by the nation's physicians during the last half century. However, despite the efforts put forth by the medical profession to protect the country's future citizens, childhood mortality continues high because of accidents—accidents that, for the most part, are preventable. The accident death rate among children is being reduced only about one-third as fast as the rate for death by disease. Preventable accidents are the leading cause of death in the age group of 1 to 14 years, killing more children than the combined mortality of the next six causes of death—

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[1] Dieckmann, W. J.: Blood Chemistry and Renal Function in Abruptio Placentae, Am. J. Obst. & Gynec. **31**: 734, 1936.

[2] (*a*) Moloney, W. C.; Egan, W. J., and Gorman, A. J.: Acquired Afibrinogenemia in Pregnancy, New England J. Med. **240**: 596, 1949. (*b*) Weiner, A. E.; Reid, D. E., and Roby, C. C.: Coagulation Defects Associated with Premature Separation of the Normally Implanted Placenta, Am. J. Obst. & Gynec. **60**: 379, 1950. (*c*) Schneider, C. L.: Fibrin Embolism (Disseminated Intravascular Coagulation) with Defibrination as One of the End Results During Placenta Abruptio, Surg. Gynec. & Obst. **92**: 27, 1951. (*d*) Page, E. W.; Fulton, L. D., and Glendening, M. P.: The Cause of the Blood Coagulation Defect Following Abruptio Placentae, Am. J. Obst. & Gynec. **61**: 1116, 1951.

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[7] Steiner, P. E., and Lushbaugh, C. C.: Maternal Pulmonary Embolism by Amniotic Fluid, J. A. M. A. **117**: 1245 (Oct. 11) 1941.

[8] Footnotes 2, 5, and 6. Ranney, B.: Abruptio Placenta, Blood Defibrination, Lower Nephron Syndrome, and Sequellae: A Case Report, South Dakota J. of Med. **6**: 6, 1953. Goodfriend, M. J.; Shey, I. A., and Siegelbaum, H. L.: Defective Blood Coagulation Associated with Premature Separation of the Placenta, Am. J. Obst. & Gynec. **65**: 1034, 1953.

pneumonia, congenital defects, cancer, tuberculosis, leukemia, and heart disease—and killing many, many more children than poliomyelitis.

According to a recent report of the Children's Bureau of the Department of Health, Education, and Welfare, the 1949 accident death rate of children under one year of age was 72.1 per 100,000. Home accidents of various kinds accounted for infant deaths at the rate of 43 per 100,000. The largest single cause of accidental death in infancy was the inhalation or ingestion of objects; fire, explosions, and burns and motor vehicle accidents followed in that order. Children 1 to 4 years of age died from accidents at the rate of 37.8 per 100,000, with motor vehicle accidents; fires, explosions, and burns; and drownings as the leading causes.

"Accident Facts, 1953," published by the National Safety Council, points out that in 1952 accidental deaths among children 5 to 14 years of age totaled 6,100. Of these deaths, 2,450 were classed as due to motor vehicles, 1,150 occurred in the home, 2,300 were classed as public non-motor-vehicle accidents, and 200 were classed as occupational. In addition, thousands of school-age children are injured sufficiently each year to require the attention of a doctor or to cause absence from school of one-half day or more. Injuries occurring in school buildings account for 26% of such cases, on school grounds for 29%, going to and from school for 5%, at home for 17%, and in other places, chiefly public, for 23%. In school buildings, about one-third of the injuries occur in gymnasiums; classrooms are next, with vocational shops, stairways, and corridors following. On school grounds, injuries occur somewhat more frequently during organized activities than during unorganized ones. In organized activities they happen most frequently in football and baseball; in unorganized activities, they occur most frequently in falls and running accidents. Going to and from school, the principal source of injury is motor-vehicle accidents.

Although there is little a physician can do directly to prevent childhood deaths and disabilities due to accidents, there is much he can do indirectly. To most persons a physician is more than a doctor of medicine—he is a friend. As such a friend, a physician can proffer advice. It is up to the physician to take the initiative to instruct parents and school personnel, specifically, and the entire community, generally, in childhood safety problems. Adults must be made to understand the accident problem of children and must be made as concerned about it as they are about childhood diseases. As children do not always conform to the practices that would insure their greatest safety, the cooperation of adults is necessary. Only by such cooperation can the toll of childhood death and disability due to preventable accidents be cut. Children deserve the chance to grow up—it is up to every adult to give them that chance.

TREATMENT OF PULMONARY EDEMA

Inhalation of a vapor obtained by oxygen bubbling through 50% ethyl alcohol-water solution is being used for the treatment of pulmonary edema that has resisted all other forms of therapy. In pulmonary edema there is a transudation of blood elements through altered alveolar capillary walls into the alveoli, and this fluid is churned into a froth by the respiratory activity. The proponents of alcohol vapor inhalation in the treatment of pulmonary edema believe that there is an alteration of the surface tension in the alveoli producing a collapse of the foam bubbles and that the alcohol vapor penetrates into the finer air spaces.

The oxygen is delivered from a cylinder through a simple vaporizer consisting of a 250 cc. bottle half filled with 50% ethyl alcohol-water solution, with a rubber stopper holding two large-bore metal tubes. One tube reaches to the bottom of the bottle and delivers the oxygen, which bubbles through the solution; the other tube is above the fluid level and carries the alcohol-laden oxygen to the meter mask. Sprayers and filters are not used in this set-up, so that pressure will be kept at a maximum.

This apparatus should never be used when there is an open flame in the same room. A 50% alcohol solution in water will burn easily when ignited with an open flame. The bluish flame of the alcohol dies out when the alcohol content reaches 20% or less. A 25% solution can be ignited in the presence of oxygen but not in air. A 30% solution will ignite in the presence of air or oxygen. Because a 50% alcohol-water solution, at room temperature, requires a spark of about 20,000 electrostatic volts at the surface to ignite it, there is practically no danger of static ignition. Care must be taken, however, to prevent ignition by open flame or by "flash-flame," which may be produced by the surging of oxygen through the regulator under too great a pressure, and carrying it through the alcohol-water mixture.

TETANUS IMMUNIZATION FOR HORSEMEN

Adults who ride horses all year round and who are frequently in stables should be protected against tetanus by the use of tetanus toxoid followed by booster injections. Ordinarily, two doses of 0.5 cc. of depot antigen or three doses of 0.5 cc. of fluid antigen constitute a reliable routine for basal immunization. Subsequent booster doses, conveniently given at intervals of one to two years or at the time of an injury, may be given in amounts of 0.1 cc. of either depot or fluid antigen, given deep subcutaneously. Some favor the intracutaneous route (fluid toxoid). It is significant that booster injections are effective for as long as 10 years after basal immunization. Moreover, if there is delay in prophylaxis with tetanus toxoid booster injection, severe injury, marked physical debility or blood loss, or equivocal history concerning injections of toxoid, tetanus antitoxin (not less than 10,000 units) is needed in addition to booster injections.

ORGANIZATION SECTION

ABSTRACT OF PROCEEDINGS OF THE HOUSE OF DELEGATES OF THE AMERICAN MEDICAL ASSOCIATION AT THE CLINICAL MEETING IN ST. LOUIS, DEC. 1-4, 1953

(Continued from page 1555)

No. 18. Resolutions on Joint Commission on Accreditation of Hospitals

Dr. Cleon A. Nafe, Indiana, introduced the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

WHEREAS, Considerable misunderstanding exists among physicians concerning the rules and regulations of the Joint Commission on Accreditation of Hospitals concerning the role of the Department of General Practice in a hospital; and

WHEREAS, It is not clear what methods of appeal are available to a hospital and its staff when the findings of the Commission are considered unjust; therefore be it

Resolved, That this House of Delegates of the American Medical Association request the Joint Commission on Accreditation of Hospitals to publish an article, or series of articles, in THE JOURNAL of the American Medical Association and other official publications circulating among the medical and hospital professions, to acquaint the medical-hospital profession with the regulations, bylaws, and their interpretations; and be it further

Resolved, That the commission clarify the methods by which an aggrieved hospital or its staff may appeal a decision with which they are not in agreement.

Report of Reference Committee on Miscellaneous Business

Dr. H. Gordon MacLean, Chairman, presented the following report, which was adopted:

Res. No. 18 on Joint Commission on Accreditation of Hospitals: Your committee approves this resolution and recommends that this House of Delegates of the American Medical Association request the Joint Commission on Accreditation of Hospitals to publish an article, or a series of articles in THE JOURNAL of the American Medical Association and other official publications circulating among the medical and hospital professions, to acquaint the medical-hospital professions with the regulations, bylaws, and their interpretations, and that the commission clarify the methods by which an aggrieved hospital or its staff may appeal a decision with which they are not in agreement.

No. 19. Resolutions on Proposed Amendment to Bylaws Re Powers of Judicial Council

Dr. George A. Unfug, Colorado, introduced the following resolutions, which were referred to the Reference Committee on Amendments to the Constitution and Bylaws:

WHEREAS, The Judicial Council frequently has presented to it for decision controversies between contending parties or is asked for and gives its opinion on matters with respect to which there are differences of view; and

WHEREAS, The full hearing of both parties to a controversy is essential to a just determination of it and full cognizance of all views is essential to the expression of sound opinion and it is desirable that there should be equal opportunity for all interested persons to be heard; and

WHEREAS, Interpretation of ethical principles of general application ought to be subject to examination by the House of Delegates; therefore be it

Resolved, That Division Three, Chapter XI, Section 10 (A) (1) of the Bylaws of the Association be and hereby is amended to read as follows:

(1) The judicial power of the Association shall be vested in the Judicial Council whose decision shall be final unless rejected or modified by the House of Delegates. All decisions and opinions of the Judicial Council shall be reduced to writing and kept on file at the Association headquarters. All decisions and opinions of the Judicial Council shall be open to inspection by any member of the Association at the headquarters of the Association. Any such opinion may be brought before the House of Delegates by any delegate at any of the three regular meetings of the House next succeeding the rendition of the opinion. The House may affirm or modify such opinion or return the matter to the Judicial Council for re-examination; and be it further

Resolved, That Division Three, Chapter XI, Section 10 (A) of the Bylaws of the Association be and hereby is amended by adding at the end thereof a new paragraph as follows:

(7) In matters with respect to which an investigating jury is not requested, the Judicial Council shall observe the following procedure:

(*a*) No issue between parties shall be decided by the Judicial Council without affording to each party the opportunity to be heard in the presence of each other either personally or by a representative of his choice both orally and in writing. All parties shall be notified of the time and place of hearing in ample time to make the right to be heard effective.

(*b*) No opinion (except decision of specific controversies under paragraph (*a*) above) shall be rendered by the Judicial Council until at least 60 days after the request for opinion (or the tentative opinion if no request has been made) shall have been published in THE JOURNAL of the American Medical Association for at least two consecutive issues. Any member of the American Medical Association or a designated representative may present his views on such matter to the Judicial Council in writing and, if any constituent or component society so requests, hearing shall be held by the Judicial Council at which any recognized medical society which desires it shall be heard by a representative of its choice.

Report of Reference Committee on Amendments to the Constitution and Bylaws

Dr. William L. Benedict, Chairman, submitted the following report, which, on motion duly seconded and carried, was referred to the Council on Constitution and Bylaws with the request that it report to the House at the San Francisco Session in June, 1954:

Your committee has considered Resolution No. 19 proposing an amendment to Division Three, Chapter XI, Section 10-A of the Bylaws of the Association relating to the interpretation of ethical principles. The committee believes that decisions of the Judicial Council should not be reviewed by a legislative body, namely the House of Delegates. All decisions and opinions of the Judicial Council are open to inspection by any member of the Association at the Association headquarters; therefore, the committee recommends that the proposed amendment be not approved.

The proposed amendment 7(*a*) will add no safeguards not already employed by the Judicial Council and the committee is convinced that the rights of members and of component and constituent societies are adequately protected; therefore, the committee recommends that the proposed amendment be not approved.

It is the opinion of your committee that it would be unwise and indiscreet to publish in THE JOURNAL of the American Medical Association all decisions of the Judicial Council; therefore, the committee disapproves of the proposed amendment 7(*b*).

No. 20. Resolution on Joint Committee on Hospital-Patient Relationship

Dr. Herbert B. Wright, Ohio, introduced the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

WHEREAS, In June, 1953, the House of Delegates of the American Medical Association approved "A Report of the Joint Committee on Hospital-Physician Relationships of the Board of Trustees of the American Medical Association and the American Hospital Association" and in so doing stated that the general principles contained in the joint report were in some respects more specifically stated in the "Guides for Conduct of Physicians in Relationships with Institutions" which had been finally adopted by the House of Delegates in Los Angeles in December, 1951; and

WHEREAS, Despite the statement referred to in the preceding paragraph, it has been claimed that the action in 1953 in some way superseded or modified the "Guides" adopted in December, 1951; and

Whereas, The sale of the professional services of a physician by a hospital, corporation, or other lay person involves the splitting of professional fees and the practice of medicine by a layman and is thus a violation of the Principles of Medical Ethics irrespective of whether exploitation exists; and

Whereas, It is the duty of the House of Delegates of the American Medical Association clearly and unequivocally to state the ethical principles which should guide a physician although the specific application of them and the enforcement of them is a local matter which may vary slightly in accordance with local conditions; now therefore be it

Resolved, That the House of Delegates of the American Medical Association reaffirms and readopts the "Guides for Conduct of Physicians in Relationships with Institutions" as adopted by the House of Delegates at Los Angeles in December, 1951.

No. 21. Resolutions on Employment of Physicians by Hospitals

Dr. Wesley W. Hall, Nevada, introduced the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

Whereas, Under date of June 22, 1953, the Judicial Council gave an opinion on the question of whether a doctor employed on a salary by a hospital is guilty of unethical practice; and

Whereas, The position of the American Medical Association on this point should be clear and unequivocal; therefore be it

Resolved, That a doctor employed on a salary basis by a hospital is not guilty of unethical practice unless, under the terms of his employment, the hospital may sell for its own account the doctor's professional services; and be it further

Resolved, That the amount of any payment from a hospital or other lay agency to a physician is material only insofar as it is indicative of the relationship between the physician and such agency. If the hospital collects fees for the physician's professional services, then employment of the physician on salary is conclusive evidence that the hospital is selling the physician's professional services; and be it further

Resolved, That it is unethical for a physician to permit a hospital or any other lay agency or person to sell his professional services to patients for compensation to such agency. In such case, the ethical nature of such relationship is not affected by the manner in which the physician is paid or if he is paid at all. Such relationship is contrary to the interests of the patient in that it tends (*a*) to prevent the free choice of physician, (*b*) to interpose a third party between the physician and his patient (*c*) to permit lay practice of medicine, (*d*) to encourage fee splitting, and (*e*) to commercialize the practice of medicine. This does not refer to payments by physicians of insuring agencies on the account of the patient from funds paid by the patient as premiums. If no charge is made for the physician's services or his work does not constitute the practice of medicine, then no ethical question arises; and be it further

Resolved, That the forgoing ethical principles should be followed by all physicians as previously declared by this House in the "Guides for Conduct of Physicians in Relationships with Institutions" which is hereby expressly reaffirmed; and be it further

Resolved, That if a physician or other lay agency grants to a hospital the power of disposition over his professional services by becoming, for example, a salaried employee of a hospital, under circumstances that permit the hospital to sell those services for its own account, then such circumstances "permit exploitation" as that phrase is used in "A Report of the Joint Committee on Hospital-Physician Relationships" approved by this House in June, 1953.

No. 26. Resolutions on Hospitals Practicing Medicine

Dr. Thurman B. Givan, New York, introduced the following resolutions, which were referred to the Reference Committee on Miscellaneous Business:

Whereas, The Medical Society of the State of New York has expressed its disapproval of hospitals engaging in the practice of medicine; and

Whereas, Plans are being introduced by administrative decision, often without prior consultation of the medical profession to finance hospitals and medical college deficits by requiring practicing physicians to contribute their earnings above a limit solely determined by the hospital; therefore be it

Resolved, That the American Medical Association disapproves of hospitals engaging in the practice of medicine; and be it further

Resolved, That participation of a hospital in the professional earnings of a physician (except for equitable payment to the hospital for services it renders the physician, such as provision of office space, secretarial service, and supplies) constitutes practice of medicine by the hospital and is therefore disapproved.

Report of Reference Committee on Miscellaneous Business

Dr. H. Gordon MacLean, Chairman, presented the following report, which was adopted:

Res. No. 20 on Joint Commission on Hospital-Physician Relationships; Res. No. 21 on Employment of Physicians by Hospitals, and Res. No. 26 on Hospitals Practicing Medicine: These resolutions were given thorough discussion and consideration. All three of these resolutions have to do with the same subject, hospital-physician relationships and methods of payment. Your committee is in full accord with the intent of these resolutions as we understand it. Your committee approves the recommendations of these resolutions and proposes the following substitute resolution embodying the important points:

Resolved, That in the relations of physicians and hospitals, the "Guides for Conduct of Physicians in Relationships with Institutions," as published by the American Medical Association in December, 1951, be strictly followed.

Your committee recommends the adoption of this substitute resolution.

No. 22. Resolution on Memebership Classifications

Dr. W. D. Stovall, Wisconsin, introduced the following resolution, which was referred to the Reference Committee on Amendments to the Constitution and Bylaws:

Whereas, Membership classifications within constituent associations greatly vary as to terminology and membership privileges; and

Whereas, Membership privileges and obligations common to all state associations would eliminate confusion, promote common practices and provide for an equal basis on which to determine American Medical Association delegates representation; therefore be it

Resolved, That this House of Delegates refer to its constituent associations for advice a proposal that the Board of Trustees undertake to review this matter and present recommendations intended to provide constituent and component associations with a practical solution to this problem.

No. 29. Resolution on Constituent Association Membership Standardization

Dr. J. P. Culpepper Jr., Mississippi, introduced the following resolution, which was referred to the Reference Committee on Amendments to the Constitution and Bylaws:

Whereas, There is a need for standardization of terms used for types of membership in the constituent and component medical societies; and

Whereas, There is a need for uniformity in the treatment of transfers in membership from one constituent association to another; and

Whereas, There ought to be more uniformity in the probationary period for new members, a common method for the collection of membership dues in the American Medical Association, and a uniform date in the time allowed for delinquency, so that the county, state, and American Medical Association could coordinate their membership policies; now therefore be it

Resolved, That the article in The Journal of the American Medical Association on page 1179 of the Nov. 28, 1953, issue, which suggests a plan for uniformity in membership between the constituent associations and the American Medical Association be referred in a reprint to the proper officers or committees on constitution and bylaws, requesting that the plan be studied and action taken to bring the membership regulations of the constituent associations into agreement with those of the American Medical Association.

Report of Reference Committee on Amendments to the Constitution and Bylaws

Dr. William L. Benedict, Chairman, submitted the following report, which was adopted:

Your committee has considered the resolutions introduced by J. P. Culpepper Jr. of Mississippi and W. D. Stovall of Wisconsin relative to the classification of membership and offers a substitute resolution as follows:

Whereas, There are now 32 classifications used to designate membership in the constituent associations; and

Whereas, Representation in the American Medical Association's House of Delegates is based on the constituent association's number of active members, and the type of membership held is therefore extremely important in determining the member's status in the American Medical Association; and

Whereas, There is an urgent need for uniformity which would correlate the classes of membership in the constituent associations with membership in the American Medical Association; therefore be it

Resolved, That this House of Delegates approve the plan as outlined in an article on this subject in The Journal of the American Medical Association for Nov. 28, 1953, and that it authorize the distribution of a reprint of the article to every secretary of a constituent and component medical society, with the suggestion that definite efforts be made toward the standardization of the classifications of membership in the constituent and component medical societies.

No. 23. Resolution on Medical School Training

Dr. George M. Fister, Utah, presented the following resolution, which was referred to the Reference Committee on Medical Education and Hospitals:

Whereas, Graduates from medical schools are now inadequately trained in medical ethics, medical jurisprudence, and medical economics; and

Whereas, Doctors entering the practice of medicine are handicapped as a result; now therefore be it

Resolved, That the House of Delegates of the American Medical Association recommend that the Board of Trustees offer a yearly prize of a substantial sum of money to be offered to the medical schools providing the best course in (1) medical ethics, (2) medical jurisprudence, and (3) medical economics.

Report of Reference Committee on Medical Education and Hospitals

Dr. James Z. Appel, Chairman, presented the following report, which was adopted:

Your reference committee received Resolution No. 23 introduced by Dr. George M. Fister of Utah entitled "Medical School Training." Your reference committee believes it undesirable to offer a prize to medical schools, and therefore recommends a substitute resolution, as follows:

Resolved, That the House of Delegates recommend that the Board of Trustees and the Council on Medical Education and Hospitals continue to stimulate all medical schools of the country to provide courses in medical ethics, medical jurisprudence, and medical practice and problems.

Your reference committee recommends the adoption of this substitute resolution.

No. 25. Resolution on Representatives to Joint Commission on Accreditation of Hospitals

Dr. Warren W. Babcock, Michigan, introduced the following resolution, which was referred to the Reference Committee on Medical Education and Hospitals:

Whereas, The interests of the medical profession and their patients are best served by the mutual cooperation of all physicians; and

Whereas, Specialty groups have the privilege of naming representatives to the Joint Commission for the Accreditation of Hospitals; now therefore be it

Resolved, That the Michigan State Medical Society request its delegates to the American Medical Association to recommend that the American Academy of General Practice be accorded the same privilege and that the Board of Trustees of the American Medical Association be requested to permit the American Academy of General Practice to name two of the six American Medical Association representatives to the Joint Commission on Accreditation of Hospitals.

Report of Reference Committee on Medical Education and Hospitals

Dr. James Z. Appel, Chairman, submitted the following report, which was adopted:

Your reference committee received Resolution No. 25 introduced by Dr. W. W. Babcock of Michigan entitled "Representatives to Joint Commission on Accreditation of Hospitals." After consultation with a representative of the Board of Trustees, your reference committee learned that there are two representatives of the American Medical Association on the Joint Commission on the Accreditation of Hospitals who are general practitioners. Further, it is the intention of the Board of Trustees to continue to have at least two general practitioners as part of their representation. Your reference committee believes it is bad precedent to direct the Board of Trustees to permit nominations or appointments by any organization other than included in the structure of the American Medical Association. Your reference committee therefore recommends that this resolution be rejected.

No. 27. Resolution on Gamma Globulin

Dr. Robert W. Kimbro, Texas, introduced the following resolution, which was referred to the Reference Committee on Miscellaneous Business:

Whereas, The national policy for the control and distribution of gamma globulin is now limited to one national philanthropic organization and is not generally available to those engaged in the practice of medicine except for specific purposes and with specific limitations for experimental use in limited areas threatened with only one specific disease; and

Whereas, A number of physicians have used gamma globulin for several years as an aid in the management of certain infectious complications of allergic disorders, frequently recurring respiratory infections, particularly in children, and for other nonspecific conditions; and

Whereas, Since the introduction of a control program, gamma globulin is not available for use in these circumstances, and the individual physician is no longer allowed to exercise his own judgment in the administration of this biological; and

Whereas, It is believed that the public interest would be better served by a more liberal distribution of gamma globulin; now therefore be it

Resolved, That the American Medical Association recommend that the national policies relative to the distribution of gamma globulin be reevaluated; that the National Foundation for Infantile Paralysis be requested to discontinue the purchase of gamma globulin produced by the commercial houses; and that this gamma globulin be released for normal distribution.

Report of Reference Committee on Miscellaneous Business

Dr. H. Gordon MacLean, Chairman, presented the following report, which was adopted:

Res. No. 27 on Gamma Globulin: It was brought out in evidence before your reference committee that the difficulty of obtaining gamma globulin for the treatment of diseases other than poliomyelitis will resolve itself, for three main reasons (1) that there will be a surplus of gamma globulin from 1953, (2) that there will be new methods of procuring gamma globulin, and (3) that poliomyelitis vaccine will, in all probability, supplant the need for gamma globulin in the prevention of poliomyelitis. For these reasons your committee feels there is no need for this resolution and recommends that it be not adopted.

No. 30. Resolution on Chiropractic Treatment of Crippled Children

Dr. William Weston Jr., South Carolina, introduced the following resolution, which was referred to the Reference Committee on Hygiene and Public Health:

Whereas, It has come to the attention of the Medical Society of South Carolina that chiropractors are attempting to operate clinics and to engage in the treatment of crippled children under the auspices of crippled children's societies of certain states; therefore be it

Resolved, That the American Medical Association investigate this condition and advise the various states as required, and that they condemn the chiropractic treatment of cerebral palsy cases under the crippled children's societies' programs if and wherever this exists.

Report of Reference Committee on Hygiene and Public Health

Dr. Thurman B. Givan, Chairman, submitted the following report, which was adopted:

Res. No. 30 on Chiropractic Treatment of Crippled Children: Your committee accepts this resolution with the following changes: That the American Medical Association condemn chiropractic or other cult treatment of cerebral palsy cases under the programs of crippled children's societies wherever they exist. It is the opinion of your committee that any investigation of this situation should be carried out at the local level.

No. 31-A. Resolution on Malpractice Insurance Premiums

Dr. William H. Halley, Colorado, introduced the following resolution, which was referred to the Reference Committee on Insurance and Medical Service:

Whereas, Individual members are much concerned about the constantly increasing rates being charged for physicians' liability (malpractice) insurance premiums; now therefore be it

Resolved, That the House of Delegates requests the Board of Trustees of the American Medical Association to investigate thoroughly both the reasons for these constantly increasing premium rates and the possibilities for bringing about a reduction in these rates.

Report of Reference Committee on Insurance and Medical Service

The report of the reference committee on Resolution No. 31-A is contained in its report on the report of the Council on Medical Service on page 1547 of The Journal, Dec. 26, 1953.

No. 31. Resolutions on Death of Dr. Joseph F. Londrigan

Dr. Elmer P. Weigel, New Jersey, introduced the following resolutions, which were adopted by a unanimous rising vote, without referral:

Whereas, The Medical Society of New Jersey was recently bereaved through the death of its distinguished and beloved member and former president, Dr. Joseph F. Londrigan; and

Whereas, For many years Dr. Londrigan rendered exemplary service as a member of the New Jersey delegation to the American Medical Association; and

Whereas, He would have attended this session to round out the term of his services had not death intervened; therefore be it

Resolved, That the House of Delegates of the American Medical Association record its grief at his passing by standing in silence for one minute in reverent memory; and be it further

Resolved, That a copy of this resolution be spread upon the minutes of this meeting.

Motion on Tape Recording of Proceedings in House

The Speaker announced that a request had been received from one of the constituent associations to make a tape recording of this meeting of the House of Delegates, including the reports of reference committees and all discussions.

Dr. Hugh H. Hussey, District of Columbia, moved that the permission requested be granted. The motion was seconded by several and, after discussion, was lost.

Remarks of Dr. Howard A. Rusk

Dr. Howard A. Rusk, of the Rehabilitation Mission to Korea for the American-Korean Foundation, was introduced by the Speaker and offered the following remarks:

Mr. Speaker and Gentlemen: I appreciate the privilege of giving you this progress report. You were kind enough to let me speak for a few minutes before your meeting in June to tell you something about the health situation and that of our colleagues in Korea. Since that meeting, I have been back to Korea on a second mission. I conveyed to them the feelings of their colleagues in America and gave them a copy of a resolution that you passed at the June meeting. I can not express to you adequately what it meant to the Korean doctors to know the feeling of their colleagues here in America, and today I bring you a message from them of deepest gratitude.

It is particularly pertinent that this report be made to you this morning, because, as you know, four days ago they had the most disastrous fire at Pusan that there has ever been in that country. A city of 250,000 swollen to 1,250,000 refugees, where a fire broke out that burned a mile and one-half strip a half mile wide through the middle of the city, which made homeless more than 300,000 people and destroyed 3,000 houses. You have seen in the press, as of yesterday, what the G. I.'s are doing to help these homeless people, but this morning I want to tell you what our profession has done in the last eight months for Korea.

Upon the plea of the American Korean Foundation, in connection with the need for books, the physicians of America sent to Korea more than 8,000 books. There is still a great need for textbooks and periodicals after 1950 that, if sent to the Alameda Army Depot collect, the American Foundation and the Army will send on to Korea. In addition, the World Medical Association has made available to Korea, through the pharmaceutical houses, enough of their current publications for every doctor to have one. In addition, they have made a substantial monetary contribution to reestablish the national medical society of Korea. In addition, the pharmaceutical houses of America through our foundation have given more than one million dollars worth of drugs and pharmaceuticals in the last eight months, which we have shipped to Korea and certain critical items are going out in the next day or two to meet the needs after the fire. On our mission in Korea in August, we established the first public health school ever established in Korea, and within thirty days after it was established the first class of 30 doctors came in for graduate training. We have also been able to establish a control council for tuberculosis headed by young Korean doctors trained in this country, and one for leprosy, and we have set up a national program for nurses' training.

My reason for remaining here this morning is to say publicly thank you for all the physicians have done, and to bring out one idea that I wonder if our profession might not be interested in. The average doctor in Korea makes about $70 a month. In an inflated economy, much more inflated than we are here, you see how impossible it is to live. Most of them have not had a new suit of clothes for at least five years. The teaching profession, the school teachers, recognizing this need, last year set about in their own organization to raise funds to buy a new suit of clothes, or a new dress, for every teacher in Korea —not the actual dress and the suit of clothes but cloth and the findings. We now have raised among the teachers of America some $80,000, enough for a new suit or a new dress for every teacher in Korea. What it has done for their morale you might well realize. Our foundation hopes to set up a similar program for doctors. It costs about $20 for a suit of clothes. We shall announce it in the appropriate journals, but I thought I would like to tell you about our idea which will be a part of our attempt to help Korea help itself.

Thanks again for all that you have done, in behalf of the Korean doctors as well as those of us of the Foundation.

No. 32. Resolution from Executive Committee of Section on Military Medicine

Permission was requested by the delegate of the Section on Military Medicine, Dr. Russel V. Lee, for the introduction of a Resolution on Medical Military Scholarships. The request was referred to the Reference Committee on Medical Military Affairs for determination as to its emergency nature.

Report of Reference Committee on Medical Military Affairs

Dr. William A. Hyland, Chairman, presented the following report, which was adopted:

Your reference committee recognizes the urgency of this resolution. However, in view of the significance of the subject and the need for thorough consideration, it is recommended that the House of Delegates not act on the resolution during this session, but that it be referred to the Board of Trustees for prompt and careful study and action.

No. 33. Resolutions on Death of Dr. Joseph H. Howard

Dr. Stanley B. Weld, Connecticut, introduced the following resolutions, which were adopted by unanimous rising vote, without referral:

WHEREAS, In the death of Dr. Joseph H. Howard of Bridgeport, Conn., in September of this year American medicine has lost one of its most courageous and enthusiastic statesmen and the medical profession of Connecticut a leader of outstanding ability; and

WHEREAS, Dr. Howard, an eminent gynecologist and obstetrician, was a member of the House of Delegates of the American Medical Association for the past eight years, a past president of his county and state medical societies and a member of many allied organizations where his counsel and judgment were sought during all the 30 years of his membership in organized medicine; therefore be it

Resolved, That the House of Delegates of the American Medical Association in session in St. Louis Dec. 1 to 3, 1953, expresses its deep sense of loss in the death of Dr. Howard; and be it further

Resolved, That a copy of this resolution be sent to the family of the deceased.

Report of Reference Committee on Credentials

Dr. Walter E. Vest, Chairman, presented the following report, which, with the exception of Recommendation 10, was adopted:

Your Reference Committee on Credentials met three times and offers the following report:

One hundred and seventy-eight delegates have been seated so far this session.

Your committee believes that the House of Delegates of the American Medical Association is the greatest deliberative medical body in the world, and that the decisions arrived at in its sessions set the patterns for medicine now and provide the guideposts for medicine-to-be for the entire predictable future. It behooves the House of Delegates, therefore, to be sure of the credentials of every member seated and to have documentary evidence in the committee files to justify the seating of every member admitted. Your committee believes also that the legality of the transactions of this body might possibly be called in question if an individual should be seated and vote, and it should develop later that he had no legal right to membership, certainly if the vote were close. Approximately a dozen members of this House presented either faulty credentials or none, and your committee feels this is too high a percentage. The representative from one state, an alternate this year and a duly elected delegate for 1954, presented no credentials, apparently through no fault of his own. Your committee voted to seat him, and the president of his society has since confirmed his eligibility to membership by telegram.

In order to expedite the work of the House of Delegates at future sessions and especially to simplify and expedite the work of the Reference Committee on Credentials your committee offers the following recommendations:

1. That hereafter only those individuals presenting documentary evidence of the right to membership in the House of Delegates satisfactory to the Credentials Committee for deposit in the committee files be seated.

2. That the Credentials Committee be furnished by the headquarters office not only an official list of delegates but a separate official list of alternate delegates as well.

3. That a supply of blank credentials cards be available.

4. That the desk for filling out House of Delegates register slips be plainly marked and, where physical facilities admit, that this desk be aligned with the committee's desks.

5. That one entirely separate desk, suitably marked, be set up for the registration of alternate delegates and that this desk be manned by employees of the American Medical Association rather than by members of the House of Delegates.

6. That the Credentials Committee's desks, instead of being marked with letters as at present, be marked "Alabama to Montana," and "Nebraska to Wyoming, Territories and Sections."

7. That two rubber stamps bearing the words "Credentials Accepted" be furnished the Credentials Committee.

8. That with the Secretary's letter to prospective members of the House of Delegates a slip be enclosed on which is printed in bold capitals, preferably in red ink, the following: Be Sure to Read "Your Role as a Delegate;" Be Sure to Bring Your Credentials; Be Sure to Present This Slip with Your Credentials. This slip can be stamped "Credentials Accepted" and presented for badges and House of Delegates folders and badges and folders given to members only on presentation of this slip properly stamped.

9. That badges and House of Delegates folders be given out together.

10. That a separate door be marked for the admission of delegates and that this door be locked as soon as the House is called to order and thereafter delegates and visitors alike be required to use the general entrance at the rear of the meeting room.

11. That at least two members of the Credentials Committee be appointed from the membership of its immediate predecessor.

12. That the Secretary of the Association be authorized to disregard any of these suggestions he deems impractical.

No. 34. Resolutions on Voluntary Health Insurance

Dr. Percy E. Hopkins, Illinois, introduced the following resolutions, which the Speaker announced the Reference Committee on Insurance and Medical Service had declared to be of an emergency nature, and which were adopted unanimously:

On Dec. 2, 1953, the Council on Medical Service received information from the Committee on Prepayment Medical and Hospital Service, which, in the opinion of the Council, demands immediate action by the House of Delegates of the American Medical Association. Therefore, the following resolutions are presented:

WHEREAS, Health Service, Inc., a capital stock casualty insurance company reported to be wholly owned by the Blue Cross Commission of the American Hospital Association, has issued insurance contracts to employees of the meat packing industry and their dependents in violation of the principles established by the American Medical Association; and

WHEREAS, Health Service, Inc. and other insurers may issue other similar contracts; and

WHEREAS, The issuance of these contracts is evidence of continued disregard of the principles as set forth by the House of Delegates of the American Medical Association, which principles define pathology, radiology, anesthesiology, and physiatry as medical services; and

WHEREAS, This continued disregard becomes even more disturbing in view of the fact that Medical Indemnity of America, Inc., an insurance company said to be owned and controlled by Blue Shield Medical Care Plans, Inc., and Health Service, Inc., are operated under an agreement whereby each insurer assumes half of the risk underwritten by the other; and

WHEREAS, The American Medical Association is concerned with all branches of medicine as they relate to the health of American citizens and recognizes that insurance plans of this type will result in lowering the quality of medical care; therefore be it

Resolved, That the American Medical Association condemns all insurance contracts which classify any medical service as a hospital service; and be it further

Resolved, That the House of Delegates in session on Dec. 3, 1953, reaffirms all past actions of the House of Delegates relating to the subject, which actions are compatible with the following:

With respect to hospital expense benefit insurance the House at its 1937 Annual Meeting in Atlantic City stated: "The subscribers' contract should exclude all medical services—contract provisions should be limited exclusively to hospital facilities. If hospital service is limited to include only hospital room accommodations such as bed, board, operating room; medicines, surgical dressings, and general nursing care, the distinction between hospital service and medical service will be clear."

In 1950 at the Cleveland Clinical Session the House amplified its position as follows: "The hospital benefits should include bed, board, general nursing, operating and obstetrical room services, dressings, and medications while in the hospital. Electrocardiographic, metabolic, roentgenographic, pathology studies, anesthesia, and physiotherapy should be included in the medical insurance benefits and not in the hospital contract.

"The patient should have a free choice of physician regardless of the insurance plan purchased or provided."

Again, at its 1951 Clinical Sesion in Los Angeles the House redefined certain medical practices in the following words:

"Past actions of the House of Delegates give every reason to reiterate that radiology, anesthesiology, pathology, and physiatry constitute the practice of medicine;" and be it further

Resolved, That copies of this resolution be sent to Health Service, Inc., Medical Indemnity of America, Inc., Blue Cross Commission, Blue Shield Medical Care Plans, Inc., The Health Insurance Council, and other insurance organizations which have issued or may issue contracts in conflict with these resolutions.

Report of Reference Committee on Rules and Order of Business

Dr. Joseph B. Copeland, Chairman, presented the following report, which was adopted:

Your Reference Committee on Rules and Order of Business, acting for the House of Delegates, wishes to make some brief motions expressing commendation and appreciation to various persons and organizations whose efforts have contributed so much toward making this meeting successful.

1. Your reference committee moves that a sincere vote of thanks and appreciation be extended to the Local Committee on Arrangements under the able chairmanship of Dr. Llewellyn Sale, and to the Subcommittee on Woman's Auxiliary to the St. Louis Medical Society under the chairmanship of Mrs. Theodore Greiner.

2. To the Secretary's Office and staff under the capable direction of Mrs. Cascio and to the Public Relations Bureau and staff of the headquarters office.

3. To the Missouri State Medical Association and the St. Louis Medical Society.

4. To the city of St. Louis and the St. Louis Convention and Publicity Bureau headed by Mr. Fred Rein.

5. To the Jefferson Hotel, its management and staff, especially Mr. Dix.

6. To the Michigan State Medical Society and the Michigan Medical Service and to the Aces and Deuces, for the luncheons these groups gave for the House of Delegates.

7. To the Speaker and Vice Speaker of the House of Delegates for their usual fair and judicial handling of the proceedings of the House.

The House of Delegates adjourned sine die at 3 p. m., Thursday, Dec. 3, 1953.

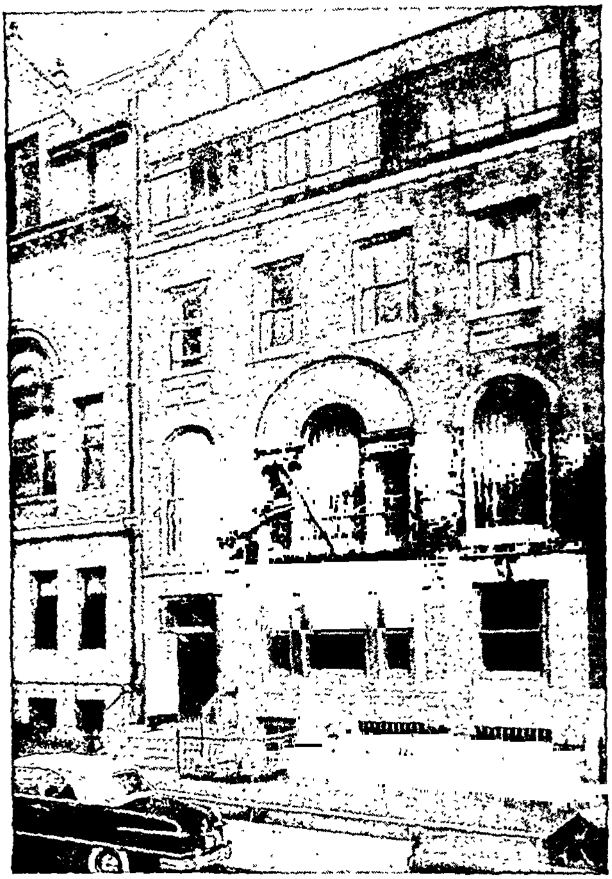
PHYSICIANS REGISTRATION
CLINICAL MEETING, ST. LOUIS, DEC. 1-4, 1953

Alabama	18
Arizona	2
Arkansas	31
California	52
Colorado	23
Connecticut	12
Delaware	4
District of Columbia	24
Florida	8
Georgia	9
Hawaii	1
Idaho	7
Illinois	506
Indiana	91
Iowa	60
Kansas	38
Kentucky	38
Louisiana	18
Maine	2
Maryland	15
Massachusetts	24
Michigan	59
Minnesota	58
Mississippi	15
Missouri	1,040
Montana	8
Nebraska	25
Nevada	2
New Hampshire	2
New Jersey	21
New Mexico	4
New York	70
North Carolina	7
North Dakota	9
Ohio	114
Oklahoma	31
Oregon	9
Pennsylvania	32
Puerto Rico	1
Rhode Island	3
South Carolina	6
South Dakota	5
Tennessee	37
Texas	71
Utah	8
Vermont	1
Virginia	18
Washington	16
West Virginia	9
Wisconsin	43
Wyoming	5
Total	2,712
Other Countries	
Canada	4
England	2
India	2
Israel	1
Korea	2
Norway	1
Pakistan	2
Philippines	2
Thailand	1
Uruguay	1
Total	18
Grand Total	2,730

MASSACHUSETTS STATE MEDICAL SOCIETY

To permit readers of The Journal *to become better acquainted with the activities of state medical associations articles describing them will appear from time to time in these pages.*—Ed.

Having the distinction of being the oldest medical society in the United States with a continuous existence, the Massachusetts Medical Society is first in The Journal's series on medical societies affiliated with the American Medical Association. Fourteen founders were listed in the bill for incorporation of the present society, read for the first time to the legislature on May 11, 1781. About half a year later (Nov. 1) when Gov. John Hancock signed the charter act, 31 incorporators were listed. Other but short-lived medical societies had appeared earlier. The first such society was formed in Boston in 1735; the second was "A Society of Gentlemen in New York, Founded About 1749 for the Weekly Discussion of Medical Subjects"; and the third was the Philadelphia Medical Society, founded in 1765. In the same year Cotton Tufts of Weymouth tried to organize a state medical society, and the following year, on July 23, 1766, the Medical Society of New Jersey came into being, but for an interrupted course, its meeting being suspended from 1775 to 1781 and from 1795 to 1807.



Headquarters of Massachusetts State Medical Society.

The Massachusetts Medical Society held its first meeting Nov. 28, 1781, in the County Court House, Boston. By 1803 it had acquired a membership of 67. In the 150 intervening years, 172 years after its founding, the society has expanded to its present membership of 7,191 physicians in 19 district medical societies, with a woman's auxiliary of 2,000 members. Its headquarters building at 22 The Fenway in Boston, a four-story structure with basement and sub-basement facilities, houses the offices of the president, secretary, treasurer, executive secretary, and director of medical information and education; the recently incorporated Postgraduate Medical Institute; an auditorium-type meeting room seating 49; and two smaller committee rooms. Two additional auditoriums are available for use by the society in the Boston Medical Library, which is located next door and which contains the editorial offices of the weekly *New England Journal of Medicine*, the official organ of the Massachusetts and New Hampshire medical societies. Headquarters facilities of the Massachusetts Medical Society are made available to allied medical and health groups, and a central clearing house of all available information concerning postgraduate medical education in the state was set up in 1951 as a service to physicians in cooperation with the medical schools of Harvard University, Boston University, and Tufts College; the Lahey and Joslin clinics; the Massachusetts Heart Association; the Tuberculosis and Health League; the Academy of General Practice; and the National Foundation for Infantile Paralysis. In cooperation with the medical societies of New England, the society conducts the annual three day New England Postgraduate Assembly. Officers of the society for the current year are: president, Dr. Frederic Hagler; president-elect, Dr. Curtis C. Tripp; vice-president, Dr. Harvey A. Kelly; secretary, Dr. Robert W. Buck; treasurer, Dr. Eliot Hubbard Jr., and assistant treasurer, Dr. Norman A. Welch. Dr. John F. Conlin is director of medical information and education, and Mr. Robert St. B. Boyd serves the association as executive secretary.

THE SCIENTIFIC EXHIBIT AT THE ST. LOUIS CLINICAL MEETING

The Scientific Exhibit at the Clinical Meeting in St. Louis was acclaimed by numerous physicians as an outstanding contribution to graduate medical instruction. The spaciousness of the hall permitted a dignity not often attainable, while the artistic efforts of numerous contributors resulted in a group of exhibits that were delightful. The exhibit symposium on prevention of traffic accidents was a timely subject, exciting much attention including that of police officers and judges of traffic courts. The special exhibit on fractures was as popular as ever. An added feature this year was a consultation service, where physicians could discuss their problems with a group of experts. Manikin demonstrations on problems of delivery, which were presented several times each day, resulted in unexpectedly large audiences that overflowed the space available. The question and answer conference on diabetes was conducted in a small room adjacent to the exhibit on the same subject. The room was filled to capacity at all times.

There were 78 other exhibits, grouped for the most part according to subject discussed in the clinical lectures, including surgery, obstetrics and gynecology, internal medicine and therapeutics, arthritis and rheumatism, cardiovascular diseases, pediatrics, pulmonary diseases, gastrointestinal diseases, neurology and psychiatry, and miscellaneous subjects. The careful preparation of these exhibits, together with the conscientious demonstration by their authors throughout the week, supplemented the lectures on the same subjects and added much to the value of the meeting. An acknowledgment of gratitude is made to the numerous physicians and scientists who contributed so much of their time and energy in helping to make the meeting a success.

Motion pictures were shown at hours that did not conflict with the lecture program of the section groups. The films were carefully selected for their general interest by the Committee on Medical Motion Pictures. In addition to the regular program, a three-dimension film was shown each day in another area. On Wednesday evening, an outstanding group of films was presented at the Statler Hotel. The capacity audience, together with the laudatory comments, encourages the extension of such an evening attraction. The Committee on Scientific Exhibit expresses appreciation to the chairman of the local committee on arrangements and to all members of the subcommittees for their willing cooperation.

NEW A. M. A. PUBLICATION

Conference on Veterans' Medical Care.—This pamphlet *comprises a summary of the* conference on veterans' medical care held in Chicago, Sept. 1, 1953, and sponsored by the *Committee on Federal Medical Services,* Council on Medical Service, American Medical Association.

MEDICAL NEWS

ALABAMA

Hospital News.—The State Building Commission has allocated 1 million dollars for improvements at Alabama mental institutions. Bryce Hospital at Tuscaloosa was allotted $805,000 for a new building and $100,000 for renovation and improvement of present facilities. Searcy Hospital, Mount Vernon, was given $80,000, Partlow State School, Tuscaloosa, $15,000, and the Institute for the Deaf and Blind at Talladega, $70,000 for a new dormitory, $50,000 for a shop building, and $80,000 for improving present buildings.

Personal.—Dr. French H. Craddock Sr., medical director of the Drummond-Fraser Hospital, Sylacauga, was recently named vice-president of Avondale Mills in recognition of his long service record with the company. He will continue as medical director of the hospital.——Dr. Roger D. Baker, professor of pathology, Medical College of Alabama, Birmingham, since 1944, has been appointed professor of pathology at Duke University School of Medicine, Durham, N. C., and chief of pathology at the VA Hospital in Durham.——Dr. Robert H. Watson, Georgiana, was recently honored when a loving cup was presented to him in appreciation of his more than 50 years of service to the community.——Dr. James L. Hardwick, a veteran of World War II, was recently elected mayor of Talladega.

CALIFORNIA

Study of Insect Disease Vectors.—The School of Tropical and Preventive Medicine, College of Medical Evangelists, Loma Linda, recently built a mobile laboratory unit, mounted on a four-wheel-drive jeep chassis, which will be used for an expedition to Mexico to study insect disease vectors.

Meeting on Bacterial Infections.—The Los Angeles Society of Internal Medicine will meet Jan. 6 in the lounge of the Los Angeles County Medical Association. Guests are welcome for the 8 o'clock program, in which Dr. W. Barry Wood Jr., head, department of medicine, Washington University School of Medicine, St. Louis, will present "Studies on the Cellular Immunology of Acute Bacterial Infections."

Society-Sponsored Arts Center.—At the annual San Joaquin County Fair, the San Joaquin County Medical Society sponsored a Medical Arts Center. The exhibitors were the American Cancer Society, National Tuberculosis Association, American Heart Association, local health district, American Red Cross, St. Joseph's Hospital, National Society for Crippled Children and Adults, National Foundation for Infantile Paralysis, and the medical society. The medical center included displays depicting the work of each of these organizations.

Mass Distribution of First Aid Charts.—Through the joint effort of the Los Angeles *Times* and the Los Angeles County Medical Association, 750,000 local residents were offered a first aid chart that was reproduced in full on the editorial page of the *Times*, and accompanied by a signed article by Dr. Paul D. Foster, president, Los Angeles County Medical Association, urging readers to clip out the chart and paste it on the inside of their medicine cabinets. The enthusiastic response to the chart has resulted in plans to give it even broader circulation. Lockheed Aircraft has reproduced it in a plant publication that reaches 60,000 employees. Copies of the chart printed on cardboard in red and white are available at cost, $2.10 per hundred. Phone DUnkirk 5-1581, or write to 1925 Wilshire Blvd., Los Angeles 57.

COLORADO

Home for Asthmatic Children.—The National Home for Jewish Children at Denver, which has as the core of its program the free, nationwide treatment of needy children suffering from chronic intractable asthma, has changed its name to the Jewish National Home for Asthmatic Children. The institution first opened in 1907 as a "sheltering home" for dependent children of the tuberculous poor. In 1940 the home launched its research program devoted to the child with asthma. Since then it has given completely free treatment to children from practically every state in the Union. The American Medical Association recently presented a research grant to Dr. Allan Hurst of the home to further studies of pulmonary functions in children. Dr. M. Murray Peshkin, New York, president of the American College of Allergists, is chief national medical consultant to the home.

CONNECTICUT

Tumor Clinics' Award.—The Association of Connecticut Tumor Clinics announces the second annual competition for the award for the best paper on cancer submitted by any licensed physician in Connecticut. First prize is $100 and second prize, $50. Preference will be given to papers relating to the results of treatment of cancer based on studies utilizing the tumor records of the Connecticut hospitals. All entries must be sent to the secretary, Association of Connecticut Tumor Clinics (Dr. Robert Tennant, 80 Seymour St., Hartford 14) on or before March 1.

Lectures on Monday Evenings.—The Hartford Medical Society announces a series of lectures on Mondays at 8:30 p. m. in the Hunt Memorial Building, Hartford, following a 5 o'clock clinical conference at one of the local hospitals:

Jan. 18, Practical Approach to Treatment of Anxiety, Joseph F. Hughes, Philadelphia.
Feb. 1, Surgical Treatment of Pancreatic Disease, Richard B. Cattell, Boston.
Feb. 15, Some Problems Associated with Major Catastrophes, Isidor S. Ravdin, Philadelphia.
March 1, Diagnosis and Management of Diseases of the Aseptic Meningitis Type, Theodore E. Woodward, Baltimore.
March 15, Clinical Disturbances Produced by the Overfunction and Underfunction of the Pituitary Gland, Edward H. Rynearson, Rochester, Minn.
April 5, Angiography, Israel Steinberg, New York.
April 19, Indications for Surgery in Valvular Heart Disease: With Specific Reference to Mitral Stenosis, Edward F. Bland, Boston.

DISTRICT OF COLUMBIA

University News.—Dr. Robert P. Nenno, formerly assistant professor of psychology at the College of St. Thomas, St. Paul, has been appointed assistant professor of psychiatry at the Georgetown University School of Medicine, Washington.

Donation of Slides of Breast Tumors.—Dr. Max Cutler, Los Angeles, recently donated to the Armed Forces Institute of Pathology, Washington, D. C., the collection of large slides of breast tumors, which formed a basis for the monograph by Drs. G. L. Cheatle and M. Cutler, "Tumours of the Breast: Their Pathology, Symptoms, Diagnosis and Treatment," London, 1931.

Society Honors Dr. Herbst.—At its annual banquet, the Medical Society of the District of Columbia presented a certificate of meritorious service to Dr. William P. Herbst Jr. "in grateful acknowledgment of his service to the medical profession and to the people of the District of Columbia." Dr. Herbst was president of the society in 1946 and chairman of the executive board in 1951. He is presently chairman of the committee on public policy and a member of the committee on cancer control. One of the organizers of Washington's Blue Shield Plan, Medical Service of the District of Columbia, and a member

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Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

of its first board of trustees, Dr. Herbst has been the service's first vice-president since 1950. He is president of the Social Hygiene Society of the District of Columbia, and a member of the executive committee of the District of Columbia Survey of Medical Care of the Indigent and Related Services. He has been president of the Washington Academy of Surgery and the Washington Urological Society, and is a member of the board of trustees of the American Urological Research Foundation and of the governing board of the Committee on Postgraduate Urological Education of the American Urological Association.

IDAHO

Society News.—The Idaho Falls Medical Society elected Dr. Fred E. Wallber, president, Dr. John S. Hatch, vice-president, Dr. L. Stanley Sell, secretary-treasurer, Drs. Wallber and Dauchy Migel, delegates to the state convention, and Drs. Hamilton R. Fishback Jr. and Wendell L. Nielsen, alternates.

ILLINOIS

Fifty Year Club.—Fifty year pins and certificates were recently presented to Dr. Christian H. Zoller, Litchfield, and Dr. George D. Runkle, Stockton. A plaque honoring his 50 years of medical practice in DuPage County was presented to Dr. Edward W. Marquardt, Elmhurst, by the Illinois State Medical Society.

Hospital News.—Dr. Alan Lieberman, clinical director of Elgin State Hospital, retired Nov. 30, 1953, to enter private practice in Elgin. Dr. Lieberman, who has been a state welfare employee for 15 years, will serve as consultant in psychiatry at the hospital. Dr. Werner Tuteur, who has been in state service since 1942, has been named to succeed Dr. Lieberman.

Chicago

R. R. McCormick Foundation.—Col. Robert R. McCormick, editor and publisher of the Chicago *Tribune*, has announced the incorporation of a nonprofit organization that includes among its projects the endowment of free beds at Passavant Memorial Hospital, provision of funds to the hospital for treatment of indigent sick and injured persons, and aid to sick and disabled ex-service men.

Cardiac Conference.—The next regular clinicopathological cardiac conference of Cook County Hospital will be held Jan. 8, 11 a. m. to 12 noon, in the Children's Amphitheatre, 700 S. Wood St. Dr. Willis J. Potts, surgeon-in-chief, Children's Memorial Hospital, will speak on surgery of congenital malformations of the heart (discussion by Dr. Egbert H. Fell, clinical professor of surgery, University of Illinois College of Medicine). Everyone is invited.

New Plans for Cancer Research.—According to a report from the University of Chicago, Mr. Maurice Goldblatt, chairman of the board of the University of Chicago Cancer Research Foundation, plans to add 1,000 associates, a new class of members, to the foundation. Each of the associates will contribute $100 a year, and will meet with the doctors and scientists at an annual dinner meeting to discuss progress. Organization of the associates will be confined to Chicago at the start. By next spring Mr. Goldblatt plans to add associates from various parts of the country. Mr. Goldblatt, who is a governor of the National Cancer Institute of the U. S. Public Health Service, led a campaign in 1947 that raised $1,200,000 for the university's research facilities.

Rehabilitation Institute.—Dr. Ben L. Boynton, recently appointed professor of physical medicine and rehabilitation, Northwestern University Medical School, has been named director for the new Rehabilitation Institute of Chicago. The institute, a nonprofit organization, is patterned after the New York University-Bellevue Medical Center Institute of Physical Medicine and Rehabilitation but will be a civic undertaking, not operated in connection with any particular hospital or medical school. Its services will be available to all who qualify for rehabilitation, at standard rates established by the institute according to the individual needs of each patient. It will have on its staff consultants in all the medical specialties and a job placement officer to help rehabilitated patients secure work within the limits of their capabilities on a competitive basis among nonhandicapped persons. A team of physicians, sociologists, educators, and physical, occupational, and speech therapists will teach the patient how to make the best use of these capabilities. Among those to whom major credit is given for the organization and establishment of the new institute is Dr. Paul B. Magnuson, who has devoted his time without compensation to the project since completion of his work as chairman of the President's Commission on the Health Needs of the Nation. Dr. Magnuson, who was first medical director of the Illinois Industrial Commission, served as civilian consultant to the chief surgeon of the U. S. Army and was chief medical director of the Veterans Administration in Washington from 1946 to 1951. For 15 years he was professor of surgery at Northwestern University Medical School.

KANSAS

Society News.—The recently organized Kansas State Pediatrics Association has named Dr. Frank L. Menehan, Wichita, president, Dr. Bertrand I. Krehbiel, Topeka, vice-president, and Dr. David R. Davis, Emporia, secretary-treasurer.

Child Psychiatry Fellowship.—The John Harper Seeley foundation, Ann Arbor, Mich., has made funds available to establish the first graduate fellowship in child psychiatry at the Menninger Foundation. Dr. Povl Toussieng, the first fellow in this new program, will spend his two year training period at the Southard School. Dr. Toussieng, who received his medical degree from the University of Copenhagen, Denmark, in 1945, came to the United States as an exchange student in 1949 and, after an internship at St. Joseph's Hospital in Kansas City, Mo., entered the Menninger School of Psychiatry as a resident at Topeka State Hospital, where he completed his residency in June.

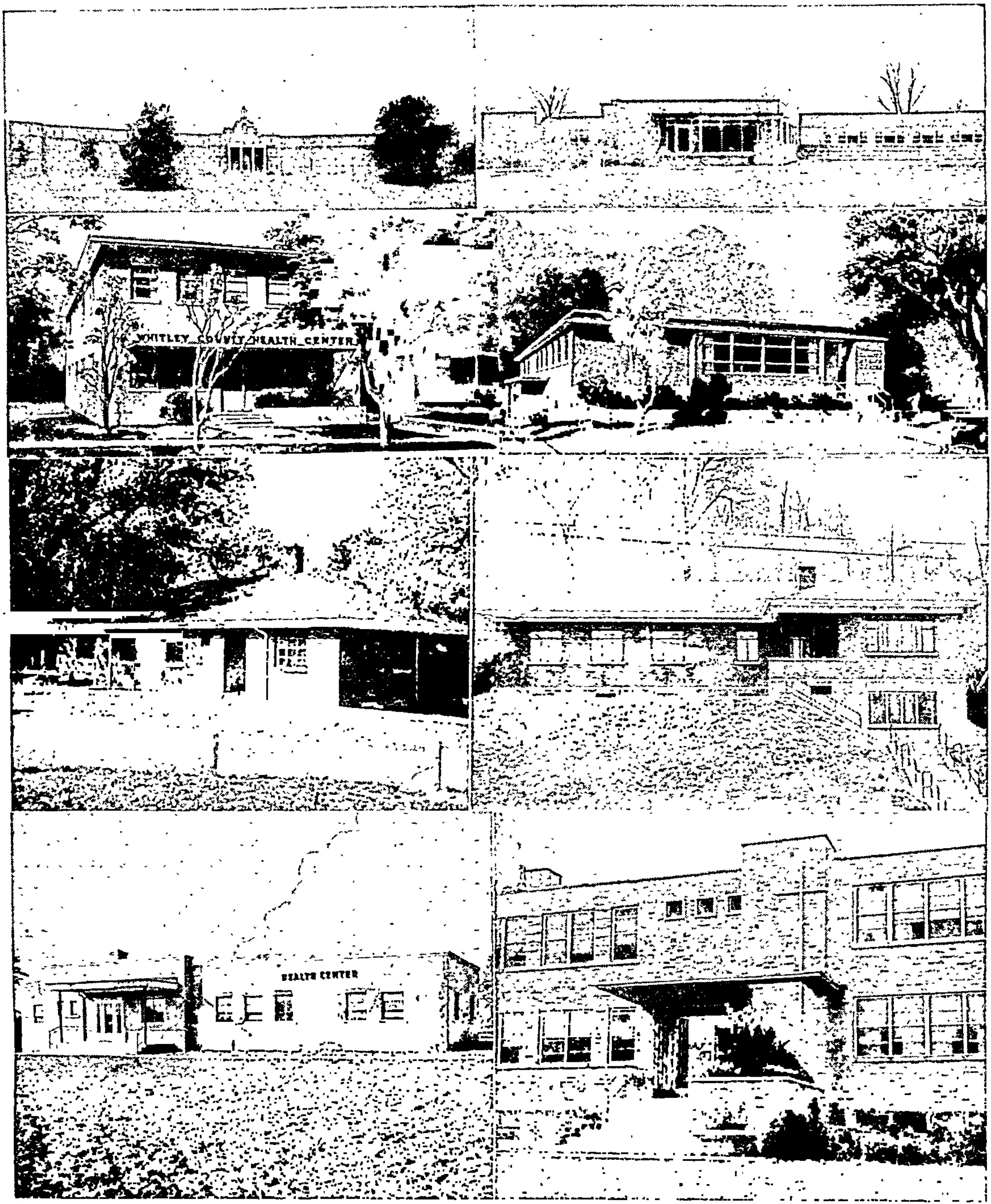
University News.—Dr. C. Frederick Kittle, assistant professor of surgery, University of Kansas School of Medicine, Kansas City, is spending several months in Europe. He will visit centers where cardiac and other thoracic surgery is being done. The Markle scholarship awarded to Dr. Kittle provides the opportunity for this period of study abroad.——An intramural research grant program has been established at the Kansas University Medical Center, Kansas City, to supplement present departmental programs supported by developmental funds. Its chief purpose is to encourage research by medical students, interns, residents, and junior staff members by providing amounts up to $500 to individuals for research projects. Grants will be made only on an annual basis, subject to continuation at the termination of the period for which each grant has been made.

KENTUCKY

University News.—Special grants for research and teaching projects to the University of Louisville School of Medicine total $366,815 for 1953, the highest figure ever recorded for one year's financial aid in the school's history, according to Dr. J. Murray Kinsman, dean. The largest of the 19 grants was $40,350 from the National Foundation for Infantile Paralysis.

Radioisotope Laboratory.—A $56,000 radioisotope laboratory to aid in combating cancer and other diseases in Kentucky and Indiana was dedicated Nov. 23, 1953, at Louisville General Hospital. Funds for the unit were provided by the city of Louisville, the cancer division of the state board of health, the Kentucky division of the American Cancer Society, and the University of Louisville, which will use the laboratory. The first patients were admitted Dec. 15 to the isotope unit, which will do research, diagnostic, and therapeutic work.

Kentucky Hospitals Built With Hill-Burton Aid.—The Hill-Burton Act, enacted by the Congress in 1946, authorized the federal government to appropriate funds to the states to assist communities in building hospitals and health centers. The total amount of funds necessary for this purpose is to be raised in part by the local communities themselves and in part by the state governments. What Kentucky has done since the passage of the act is an interesting story, as is that of various other states. THE JOURNAL hopes to be able to relate and illustrate, from time to time, some of these activities in various states.



Kentucky hospitals and health centers. Reading from top and left to right are Louisville Hospital, Scottsville Hospital, Williamsburg Health Center, Harlan Health Center, Boonville Health Center, Pineville Health Center, Somerset Health Center, and Bardstown Hospital.

Previous to the passage of the Hill-Burton Act, Kentucky had only 5,745 beds in its general hospitals and needed 13,106 beds. Then its leaders began planning for hospital construction. To date 21 hospitals, 22 health centers, and 15 additions to existing hospitals have been completed, while 8 hospitals, 2 health centers, and additions to 7 existing hospitals are under construction, and 2 more hospitals are in the planning stage. Kentucky has built not only general hospitals, but mental hospitals, tuberculosis hospitals, chronic disease hospitals, and health centers. The *Bulletin of the Kentucky State Department of Health* for November, 1952, shows that the total cost of this program at that time was $42,523,729.79, of which the local communities provided $19,626,345 and the state $964,349.64. The federal government's part in this total expenditure was $21,933,035.15. The Kentucky *Bulletin* includes many pictures of hospitals, several of which are reproduced herewith.

NEW YORK

Society News.—The Rochester Academy of Medicine will present a symposium on "stroke" Jan. 5, 8:30 p. m., at the academy headquarters, 1441 East Avenue, Rochester.——The Brooklyn Dermatological Society announces the following officers for the 1953-1954 term: president, Dr. Camillo B. Locasto; vice-president, Dr. Harry L. Feigenbaum; and secretary, Dr. Frank D. Jennings Jr.——At its annual meeting Nov. 16, 1953, the New York Allergy Society elected the following officers: Dr. Frederick R. Brown, New York, president; Dr. William B. Sherman, New York, president-elect; Dr. Murray M. Albert, Brooklyn, vice-president; Dr. Leoni N. Claman, New York, secretary; and Dr. Samuel J. Prigal, New York, treasurer.

Cardiac Consultation for Children.—The New York City Department of Health operates five cardiac consultation clinics for children at the following health centers: Red Hook, 250 Baltic St., and Williamburgh, 151 Maujer St., Brooklyn; Corona, 34-33 Junction Blvd., Jackson Heights; Lower East Side (serving children living in Manhattan and Richmond), 341 East 25th St., Manhattan; and Tremont, 1826 Arthur Ave., Bronx. Persons up to age 21 are eligible for these services on referral by their private physicians or by physicians in the department's school and child welfare health services. Patients are seen by appointment only. Of the 6,668 children referred to cardiac consultation clinics in 1952, 50.4% had disease diagnosed as noncardiac; 16.6%, potential heart disease; 12.8%, possible heart disease; and 2%, possible and potential heart disease. Organic heart disease was diagnosed in 17% of the patients, of whom 8.1% had rheumatic heart disease, 7% congenital heart disease, and 2% organic heart disease of undetermined type.

New York City

Tumor Clinic.—Dr. Alfred A. Gellhorn, director, Institute of Cancer Research, Columbia University College of Physicians and Surgeons, will present "Medical Management of Disseminated Neoplastic Disease" at the Tumor Clinic Conference, Harlem Hospital, Jan. 20, at 10:45 a. m.

Dr. Loewi Honored.—Dr. Otto Loewi, research professor of pharmacology at the New York University College of Medicine, has been made an honorary member of the Medical Board of the Myasthenia Gravis Foundation. Dr. Loewi, who celebrated his 80th birthday in June, was winner with Sir Harry Dale in 1936 of a Nobel prize for discovery of the chemical transmission of nerve impulses.

OHIO

Symposium on Ulcerative Lesions.—The Academy of Medicine of Cincinnati will present a symposium on ulcerative lesions of the colon, Jan. 5, with Dr. Milton Rosenbaum, Cincinnati, as moderator, and Drs. Rupert B. Turnbull Jr., Cleveland, and Thomas P. Almy, New York, as collaborators.

PENNSYLVANIA

Testimonial to Dr. Cole.—Dr. Lloyd G. Cole, Blossburg, chief surgeon of the Blossburg State Hospital, was tendered a testimonial dinner, Aug. 9, 1953, on completion of his 35th year of service with the hospital. As an expression of gratitude for his untiring interest in community welfare and medical progress, citizens of Blossburg and surrounding areas presented Dr. Cole with a television set, and the Tioga County Medical Society gave him a gavel symbolizing his leadership in medicine and surgery and bearing a silver band inscribed with the notable achievements of his career.

Philadelphia

Newbold Lecture.—The College of Physicians of Philadelphia on Jan. 6, 8:30 p. m., will present the 68th Mary Scott Newbold lecture. Dr. Dickinson W. Richards, Lambert Professor of Medicine, Columbia University College of Physicians and Surgeons, New York, will discuss "Physiologic Behavior and Therapeutic Use of Plasma Volume Expanders."

GENERAL

International Symposium on the Eye.—Following the International Congress of Ophthalmology in New York, next Sept. 13-17, an international symposium on the general physiology and pathology of the eye will be held, Sept. 24-25 at the College of Medicine, State University of Iowa, in Iowa City. All papers and discussions will be in English.

Hospital Booklet for Children.—To familiarize children and their parents with hospital pediatric procedures, the Boston Children's Hospital has issued the booklet "Johnny Goes to the Hospital" with colored illustrations and simple legends. Single copies are $1; six or more are 75 cents each. All profits from the sale of the booklet will go to the medical center. Orders may be placed through the Public Relations Department of the Children's Medical Center, 300 Longwood Ave., Boston 15.

Anesthesiologist Needed in Damascus.—The Institute of International Education, which reports that the Ford Foundation has equipped four operating rooms in the new government hospital in Damascus, is seeking an anesthesiologist to serve in this hospital. The contract with the anesthesiologist will be on a yearly basis at a salary of $10,000 per year plus an allowance of $2,400 for living quarters and an allowance for the shipment of household effects, not to exceed $750 each way. Round-trip travel from New York to Damascus and return will be furnished. Anesthesiologists interested in this position should write to Mrs. Shreve Badger, Department of Special Programs, Institute of International Education, 1 E. 67th St., New York 21.

Lipotropic Research Fund.—Announcement has been received of the formation of the Lipotropic Research Fund, Sept. 16, 1953, by a group of industrial companies. The group plans to encourage the publication of results of such research and to disseminate to the medical profession and other interested scientific groups information relative to the value of the lipotropic substances. It has already alloted grants to Dr. William E. Cornatzer, University of North Dakota, Grand Forks; Dr. Thaddeus D. Labecki, Mississippi State Board of Health, Jackson; Dr. Julius Pomeranze, New York Medical College, Flower and Fifth Avenue Hospitals; and Dr. William B. Rawls, St. Clare's Hospital and New York Poly-Clinic Medical School and Hospital, New York.

Meeting on Weed Control.—The Public Health Section of the Northeastern Weed Control Conference will hold its annual meeting Jan. 6 at the Hotel New Yorker, New York. The theme of the meeting will be the control of weeds detrimental to the public health, principally ragweed and poison ivy. All interested persons are invited. The first presentation, "Public Health Significance of Ragweed Control," will be made by Dr. Miriam Sachs, chief of the Bureau of Adult and Industrial Health, New Jersey State Department of Health, Trenton. At 2:45 p. m. Dr. John F. Kilgus, Connecticut State Department of Health, will discuss "Poison Ivy Dermatitis Control Procedures." Reports will be made on promotional activities in noxious weed control during 1953, public relations in ragweed control, and pollen sampling studies.

World Congress of Cardiology.—The Second World Congress of Cardiology and the scientific sessions of the American Heart Association will be held jointly in Washington, D. C., Sept. 12-17, rather than separately as originally planned. The official title of the congress, previously referred to as the Second International Congress of Cardiology, is the Second World Congress of Cardiology. The scientific sessions and exhibits will be located at the National Guard Armory. The joint scientific program will be presented Sept. 13-17. Opening ceremonies will be held Sunday morning in Constitution Hall, with a reception Sunday afternoon at the Mayflower Hotel. Plans include conducted tours through the National Institutes of Health and the Navy medical center at Bethesda, Md., and the Army medical center, a joint banquet Tuesday evening, and an evening of entertainment, Thursday. Membership will be open to all members of affiliated national cardiological societies and associations throughout the world, and to physicians and other scientists who are interested in the field of cardiology and the circulation. Those desiring to present papers must submit titles and abstracts of not over 200 words in English, and may additionally submit abstracts in one of three foreign languages—French, Spanish or German. Both abstracts and translations must be submitted in duplicate, typed double-spaced with wide margins, and on one side of the sheet only. Abstracts should be sent to the secretaries of the respective national cardiological societies. Abstracts from countries other than the United States must be received at the National Office of the Association, 44 E. 23rd St., New York 10, on or before March 1; abstracts from the United States and Canada, by April 1.

Tape Recorded Medical Abstracts.—The California Medical Association has voted to establish a subsidiary, nonprofit corporation, the Audio-Digest Foundation, to promote "Audio-Digest," a lending library on magnetic tape, originated by Jerry Pettis, public relations man for the association. Through a system of tape recordings and synchronized visual slides or film strips, current medical literature and lectures will be summarized and distributed to physicians throughout the world. Three types of service will be available: 1. A weekly, one hour tape, summarizing current literature (about 600 journals) from the standpoint of significance and practical usage, is designed primarily for the general practitioner. This material is distributed on a subscription basis. Starting Jan. 15, a bi-weekly, one hour tape will be available for surgeons; a similar service for specialists in internal medicine will be provided starting Feb. 15; and a tape digest for obstetricians and gynecologists, March 15. Taped literature of lectures can be made available in any language. 2. A medical lecture library of on-the-spot recordings made at medical conventions and specially prepared lectures for the Audio-Digest library will be available for purchase or rental. 3. The association is assembling "master" lecture tapes from the leading medical school professors in the nation's 79 medical schools. These tapes, covering the entire field of undergraduate education, will be made available to medical school libraries to supplement local lectures. All lecture material will be reviewed every six months to be kept up to date. Both the taped literature digests and the medical lectures can be duplicated and ready for distribution in less than 24 hours after the master tape has been made. An annual subscription is $2.75 a week; a 13 week trial subscription is available at $3.25 a week. The recordings are the property of the subscriber. Equipment prices, including special tape recorders equipped for use either in the office or in an automobile, range from $85 to $350. The recorder can also be used for recording case histories, consultations, and reports, as well as for general purpose listening and entertainment in the home. Profits accruing from the Audio-Digest Foundation will be earmarked for the nation's medical schools. Information may be obtained through the California Medical Association, 450 Sutter St., San Francisco 8, or 417 S. Hill St., Los Angeles 13.

EXAMINATIONS AND LICENSURE

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various Centers, July 16. Sec., Dr. Curtiss B. Hickox, 80 Seymour St., Hartford 15.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* New Orleans, Feb. 2-5 (candidates in south and southwest). Chicago, April 1-3 (candidates in the midwest). Los Angeles, June 15-17 (candidates west of the Rocky Mountains and west coast). The closing date for acceptance of applications for New Orleans, Chicago and Los Angeles will be Jan. 2. New York, Sept. 22-24 (candidates on the east coast). The closing date for acceptance of applications will be April 1). *Written.* Oct. 18. Final date for acceptance of applications will be May 1. *Subspecialties. Cardiovascular Disease.* Chicago, April 1. *Gastroenterology.* Chicago, April 2-3. The closing date for acceptance of applications for the subspecialties will be Jan. 15. Exec. Sec.-Treas., Dr. William A. Werrell, One West Main St., Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: *Oral.* Chicago, May or June. Final date for filing application is Jan. 15. Sec., Dr. Leonard T. Furlow, 600 S. Kingshighway, St. Louis 10.

AMERICAN BOARD OF NEUROLOGY AND PSYCHIATRY: *Psychiatry and Neurology.* Chicago, April 29-30. Final date for filing application is Feb. 1. Sec., Dr. David A. Boyd, Jr., 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination (Part I) and review of case histories for all candidates will be held in various cities of the United States, Canada, and military centers outside the continental United States on Feb. 5. Case abstracts are to be sent by the candidate to the Secretary as soon as possible. Application for reexamination in Part II must be made prior to Feb. 1 of any year. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Various Centers, January 25-26, 1954. Final date for filing applications was July 1. *Practical.* San Francisco, June 25-29; New Orleans, Feb. 5-11, 1955. Final date for filing application for 1955 written examination is July 1. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Part II.* Chicago, Jan. 20-22. Final date for filing application was August 15. Final date for filing application for Part I is Nov. 30. Sec., Dr. Harold A. Sofield, 122 S. Michigan Ave., Chicago 3.

AMERICAN BOARD OF OTOLARYNGOLOGY: *Oral.* Boston, May 17-21. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PEDIATRICS: *Written.* Selected Places, Jan. 15. This is the only written examination which will be given during 1954. *Oral.* Washington, D. C., Feb. 19-21; Des Moines, March 19-21; New York City, May 1-3; San Francisco, June 25-27; Chicago, Oct. 8-10 and New Haven, December.

AMERICAN BOARD OF PROCTOLOGY: *Part I.* Kansas City, Philadelphia and San Francisco, May 8. Sec., Dr. Louis A. Buie, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: Chicago, May 10-11. Sec., Dr. David A. Boyd, Jr., 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Spring 1954. Final date for filing application was Dec. 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

AMERICAN BOARD OF UROLOGY: *Oral-clinical and pathology.* Chicago, Feb. 17-20. Sec., Dr. Harry Culver, 30 Westwood Road, Minneapolis 16.

BOARD OF THORACIC SURGERY: *Written.* Various centers throughout the country. Feb. 26. Final date for filing application is Jan. 1. Sec., Dr. Wm. M. Tuttle, 1151 Taylor Street, Detroit, Mich.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1954 Annual Meeting, San Francisco, June 21-25.

1954 Clinical Meeting, Miami, Florida, Nov. 30-Dec. 3.

1955 Annual Meeting, Atlantic City, N. J., June 6-10.

1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.

1956 Annual Meeting, Chicago, June 11-15.

ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE, Palmer House, Chicago, Feb. 7-9. Dr. Edward L. Turner, 535 N. Dearborn St., Chicago 10, Secretary.

ANNUAL CONGRESS ON INDUSTRIAL HEALTH, Brown Hotel, Louisville, Ky., Feb. 24-25. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

AMERICAN ACADEMY OF ALLERGY, Shamrock Hotel, Houston, Texas, Feb. 1-3. Dr. Alan G. Cazort, 1425 West 7th St., Little Rock, Ark., Secretary.

AMERICAN ACADEMY OF FORENSIC SCIENCES, Drake Hotel, Chicago, Feb. 25-27. Prof. Ralph F. Turner, Michigan State College Dept. of Police Administration, East Lansing, Mich., Secretary.

AMERICAN ACADEMY OF OCCUPATIONAL MEDICINE, John Marshall Hotel, Richmond, Va., Feb. 11-12. Dr. Leonard J. Goldwater, 600 W. 168th St., New York 32, Secretary.

AMERICAN ACADEMY OF ORTHOPAEDIC SURGEONS, Palmer House, Chicago, Jan. 23-28. Dr. John R. Norcross, 122 S. Michigan Blvd., Chicago 3, Secretary.

AMERICAN COLLEGE OF RADIOLOGY, Drake Hotel, Chicago, Feb. 5. Mr. William C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

AMERICAN FEDERATION FOR CLINICAL RESEARCH:

- EASTERN SECTION, Amphitheater, Children's Medical Center, Boston, Jan. 4. Dr. Joseph R. Stanton, 482 Beacon St., Boston 15, Chairman.
- SOUTHERN SECTION, Jung Hotel, New Orleans, Jan. 29. Dr. William Parson, University of Virginia School of Medicine, Charlottesville, Va., Chairman.
- WESTERN SECTION, Auditorium, University of Oregon Medical School, Portland, Ore., Jan. 28. Dr. I. S. Edelman, University of California Medical Center, San Francisco Hospital, San Francisco 15, Secretary.

American Laryngological, Rhinological and Otological Society:

Eastern Section, Waldorf-Astoria, New York, Jan. 8. Dr. Daniel S. Cunning, 118 E. 53d St., New York 22, Chairman.

Middle Section, Park Plaza Hotel, St. Louis, Jan. 18. Dr. French K. Hansel, 634 N. Grand Blvd., St. Louis, Chairman.

Southern Section, Brown Hotel, Louisville, Ky., Jan. 16. Dr. William C. Wolfe, 1012 Heyburn Bldg., Louisville 2, Ky., Chairman.

Western Section, University of Oregon Medical School, Portland, Ore., Feb. 6. Dr. Guy L. Boyden, 1735 N Wheeler Ave., Portland 12, Ore., Chairman.

American Orthopsychiatric Association, Hotel New Yorker, New York, Feb. 11-13. Dr. Marion F. Langer, Room, 303 Lexington Ave., New York 16, Secretary.

American Protestant Hospital Association, Palmer House, Chicago, Feb. 10-12. Mr. Albert G. Hahn, Protestant Deaconess Hospital, Evansville, Ind., Executive Secretary.

American Society for Surgery of the Hand, Palmer House, Chicago, Jan. 22. Dr. George V. Webster, 960 East Green St., Pasadena 1, Calif., Secretary.

Central Surgical Association, Statler Hotel, Detroit, Feb. 18-20. Dr. Robert M. Zollinger, University Hospital, Columbus 10, Ohio, Secretary.

Northwest Society for Clinical Research, Portland, Ore., Jan. 28. Dr. Arthur L. Rogers, 1216 S.W. Yamhill St., Portland, Ore., Secretary.

Regional Meetings, American College of Physicians:

Eastern Pennsylvania, Philadelphia, Jan. 15. Dr. Thomas M. McMillan, 330 S. Ninth St., Philadelphia 7, Governor.

Sectional Meetings, American College of Surgeons: Charlotte, N. C., Hotel Charlotte, Feb. 1-3. Dr. Thomas D. Sparrow, 403 North Tryon St., Charlotte 2, N. C., Chairman.

Society of University Surgeons, Sheraton Hotel, Rochester, N. Y., Feb. 11-13. Dr. C. Rollins Hanlon, 1325 South Grand Blvd., St. Louis, Secretary.

Western Society for Clinical Research, Portland, Ore., Jan. 29-30. Dr. Herbert N. Hultgren, Stanford Hospital, San Francisco 15, Secretary.

FOREIGN

Association of Surgeons of Great Britain and Ireland, Leeds, England, May 13-15, 1954. Dr. Henry W. S. Wright, 45 Lincoln's Inn Fields, London W.C.2, England, Honorary Secretary.

British Medical Association, Glasgow, Scotland, July 1-9, 1954. Dr. A. Macrae, B.M.A. House, Tavistock Square, London, W.C.1, England, Secretary.

Canadian Medical Association, Vancouver, B. C., Canada, June 14-18, 1954. Dr. T. C. Routley, 244 St. George St., Toronto 5, Ont., Canada, General Secretary.

Conference of International Union Against Tuberculosis, Madrid, Spain, Sept. 26-Oct. 2, 1954. Secretariat, Escuela de Tisiologia, Ciudad Universitaria, Madrid, Spain.

Congress of International Anesthesia Research Society, Los Angeles, Calif., U. S. A., Oct. 4-7, 1954. For information write: Dr. T. H. Seldon, 102-110 Second Avenue S. W., Rochester, Minn., U. S. A.

Congress of International Association for the Prevention of Blindness, New York, N. Y., U. S. A., Sept. 12-17, 1954. Professor Franceschetti, 2 Avenue Mirmot, Geneva, Switzerland, Secretary-General.

Congress of International Society of Surgery, Paris, France, May 21-22, 1954. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, General Secretary.

Health Congress of the Royal Sanitary Institute; Scarborough, England, April 27-30. Mr. P. Arthur Wells, Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W.1, England, Secretary.

International Cancer Congress, Sao Paulo, Brazil, July 23-29, 1954. Prof. A. Prudente, 171 rua Benjamin Constante, Sao Paulo, Brazil, President.

International Conference on Thrombosis and Embolism, Basle, Switzerland, July 15-19, 1954. Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

International Congress on Child Psychiatry, University of Toronto, Toronto, Ontario, Canada, Aug. 13-14, 1954. Miss Helen Speyer, International Association for Child Psychiatry, 1790 Broadway, New York 19, New York, U. S. A., Executive Officer.

International Congress of Clinical Pathology, Washington, D. C., U. S. A., Sept. 6-10, 1954. Dr. Robert A. Moore, Washington University School of Medicine, St. Louis 10, Missouri, U. S. A., Chairman, Committee on Arrangements.

International Congress on Diseases of the Chest, Barcelona, Spain, Oct. 4-8, 1954. Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Illinois, Executive Secretary.

International Congress on Group Psychotherapy, Toronto, Ont., Canada, Aug. 12-14, 1954. Dr. J. L. Moreno, Room 327, 101 Park Ave., New York 17, N. Y., U. S. A., Director of Organizing Committee.

International Congress of Hematology, Paris, Sept. 6-11, 1954. Dr. Jean Bernard, 86 rue d'Assas, Paris 6^e, France, Secretary.

International Congress of the History of Medicine, Rome and Salerno, Italy, Sept. 13-20, 1954. For information write: Segreteria XIV Congresso Internazionale di Storia della Medicina, Instituto di Storia della Medicine, Citta Universitaria, Rome, Italy.

International Congress of Hydroclimatism and Thalassotherapy, Dubrovnik, Yugoslavia, May 8-16, 1954. Prof. C. Plavsic, Zeleni venac Belgrade, Yugoslavia, Secretary General.

International Congress of Industrial Medicine, Naples, Italy, Sept. 13-19, 1954. Professor Scipione Caccuri, Director, Institute of Industrial Medicine Policlinico, Naples, Italy, Chairman, Organizing Committee.

International Congress of Internal Medicine, Stockholm, Sweden, Sept. 15-18, 1954. Professor Anders Kristenson, Karolinska Sjukhuset, Stockholm 60, Sweden, Secretary-General.

International Congress of International College of Surgeons, São Paulo, Brazil, April 26-May 2, 1954. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago. Illinois, U. S. A., Secretary-General.

International Congress on Mental Health, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

International Congress of Nutrition, Amsterdam, Netherlands, Sept. 14-18, 1954. For information write: Dr. M. van Eekelen, Centraal Instituut voor Voedingsonderzoek T.N.O., 61 Catharynesingel, Utrecht, Netherlands.

International Congress on Obstetrics and Gynecology, Geneva, Switzerland, July 26-31, 1954. Dr. H. de Watteville, Maternité Hôpital Cantonal, Geneva, Switzerland, President.

International Congress of Ophthalmology, University of Montreal and McGill University, Montreal, Canada, Sept. 10-11, 1954, and Waldorf-Astoria, New York, N. Y., U. S. A., Sept. 12-17, 1954. Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minnesota, U. S. A., Secretary-General.

International Congress of Orthopedic Surgery and Traumatology, Berne, Switzerland, Aug. 30-Sept. 3, 1954. For information write: Professor M. Dubois, Isle-Hospital, Berne, Switzerland.

International Congress of Psychology, Montreal, Canada, June 7-12, 1954. For information write: Prof. H. S. Langfeld, International Union of Scientific Psychology, Eno Hall, Princeton University, Princeton, N. J., U. S. A.

International Congress for Psychotherapy, Zurich, Switzerland, July 21-24, 1954. Dr. H. K. Fierz, Theaterstrasse 12, Zurich 1, Switzerland, Secretary General.

International Gerontological Congress, London and Oxford, England, July 12-22, 1954. Prof. R. E. Tunbridge, General Infirmary, Department of Medicine, The University, Leeds, England, President.

International Poliomyelitis Congress, Rome, Italy, Sept. 6-10, 1954. Mr. Stanley E. Henwood, 120 Broadway, New York 5, N. Y., U. S. A., Executive Secretary.

International Society of Blood Transfusion, Paris, France, Sept. 12-19, 1954. For information write: Colonel Julliard, Societe Internationale de Transfusion Sanguine, 53 Boulevard Diderot, Paris 12^e, France.

International Society for Cell Biology, Leiden, Netherlands, Sept. 2-9, 1954. Professor Peter J. Gaillard, University of Leiden, Leiden, Netherlands, Secretary.

International Society of Geographical Pathology, Washington, D. C., U. S. A., Sept. 6-10, 1954. Professor Fred C. Roulet, Hebelstrasse 24, Basle, Switzerland, Secretary-General.

Journees Medicales, Paris, France, April 21-25, 1954. For information write: Secretariat of the Journees, 12, rue Pierre-Geofroix, Colombes (Seine) France.

Latin American Congress of Otorhinolaryngology, Caracas, Venezuela, Feb. 21-25, 1954. Dr. Victorino Marquez Reveron, Centro, Medico, Caracas, Venezuela, Secretary-General.

Latin American Congress of Physical Medicine, Medellin, Columbia, South America, Feb. 15-20, 1954. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York 21, N. Y., U. S. A., Executive Director.

Pan American Congress of Ophthalmology (Interim), São Paulo, Brazil, June 17-21, 1954. Dr. Moacyr E. Alvaro, São Paulo, Brazil, President.

Pan American Congress of Otorhinolaryngology and Bronchoesophagology, Mexico, D.F., Mexico, Feb. 28-March 4, 1954. Dr. Pedro Hernandez Gonzalo, 8 No. 358, Vedado, Havana, Cuba, General Secretary.

Pan American Medical Association, International Medical Cruise Congress, S. S. Nieuw Amsterdam, Jan. 6-22, 1954. Dr. Joseph J. Eller, 745 Fifth Avenue, New York 22, N. Y., U. S. A., Executive Director.

Pan-Pacific Surgical Congress, Honolulu, Hawaii, Oct. 7-18, 1954. Dr. F. J. Pinkerton, Suite 7, Young Bldg., Honolulu 13, Hawaii, Director General.

Sectional Meeting, American College of Surgeons, London, England, May 17-19, 1954. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Ill., U. S. A., Secretary.

South American Congress of Angiology, Sao Paulo, Brazil, July 1954. For information write: Dr. Rubens Carlos Mayall, Rua Senador Vergueiro 73, Rio de Janeiro, Brazil, S. A.

World Congress of Cardiology, Washington, D. C., and Bethesda, Md., U. S. A., Sept. 12-17, 1954. Dr. L. W. Gorham, 44 East 23d St., New York 10, N. Y., U. S. A., Secretary-General.

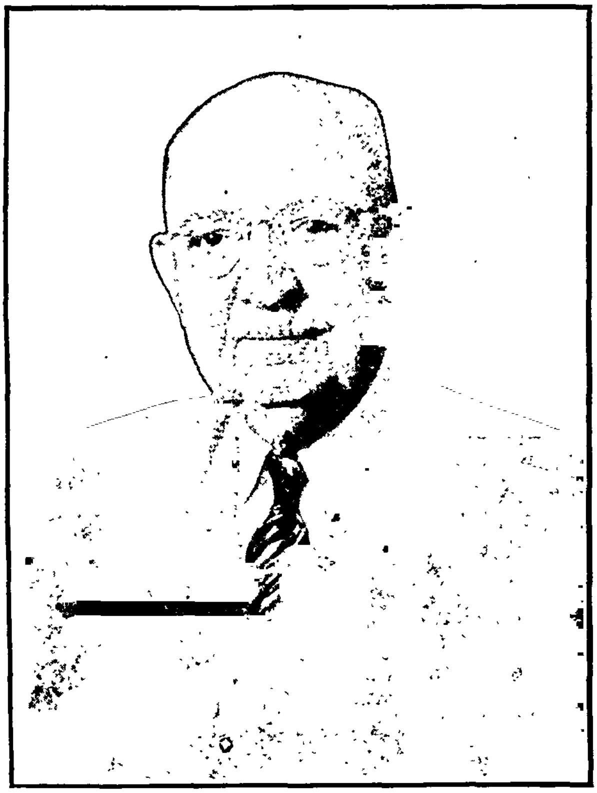
World Congress of International Society for the Welfare of Cripples, Scheveningen-The Hague, Netherlands, Sept. 13-17, 1954. Secretariat: Miss H. P. Post, Pieter Lastmarkade 37, Amsterdam Z, Netherlands.

World Federation of Occupational Therapists, Edinburgh, Scotland, August 17, 1954.

World Medical Association, Rome, Italy, Sept. 26-Oct. 2, 1954. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary-General.

DEATHS

Cary, Edward Henry ⊕ Dallas, Texas, President of the American Medical Association 1932-1933, died in the Medical Arts Hospital Dec. 11, aged 81. Dr. Cary was born in Union Springs, Ala., Feb. 28, 1872. His preparatory education was obtained at Union Springs Academy and high school in New York City, after which he entered Bellevue Hospital Medical College (New York University) and received the degree of doctor of medicine in 1898. After graduation he served an internship in Bellevue Hospital for one year, and an additional year as house physician at the New York Eye and Ear Infirmary. During the last year he was head of the ophthalmologic clinic of the Bellevue Hospital Medical College. He moved to Dallas in 1901, in 1902 became dean of the Dallas Medical School, and led in the movement to make it a department of Baylor University in 1904. He continued as dean of the Baylor University Medical School until 1929, when he became dean emeritus. From 1909 to 1929 he was chairman of the staff of Baylor University Hospital. During all this time, from 1902, Dr. Cary was professor and head of the department of ophthalmology and otolaryngology in both schools. He was instrumental in developing Baylor University Medical School into one of the leading institutions in the Southwest. In 1939, with a group of Dallas business men, he organized the Southwestern Medical Foundation, of which he was president of the board of trustees, and which on May 5, 1943, began the Southwestern Medical College, now known as Southwestern Medical School of the University of Texas, where he was professor emeritus of ophthalmology. He was presented with the 1945 award, given by Linz Brothers to the "outstanding citizen of Dallas." Dr. Cary was cited for his activities as a medical educator and principally for his work as founder and director of the Southwestern Medical Foundation. He organized the Baylor Medical Unit, which served in France in World War I. During World War II he was a member of the Appeal Board of Selective Service District No. 7. He was a Trustee of the American Medical Association from 1925 to 1929, became President-Elect in 1931, President 1932-1933, and was a member of its House of Delegates in 1906, 1909-1910, 1915-1916, from 1918 to 1923, in 1925, and from 1934 to 1951. For many years his annual contributions to the scientific exhibit at Association meetings were of distinct educational value. He was Chairman of the Committee on Legislation. Among the honors bestowed on Dr. Cary in his long and distinguished medical career have been the presidencies of the Dallas County, Texas State, Texas Ophthalmological and Otological, and Southern Medical associations. He was president of the executive board of the National Physicians Committee, the Philosophical Society of Texas, the Medical Arts Hospital, and the Group Hospital Service. A specialist certified by the American Board of Ophthalmology and the American Board of Otolaryngology, Dr. Cary was a member of the American Academy of Ophthalmology and Otolaryngology, American Laryngological, Rhinological and Otological Society, and the Association for Research in Ophthalmology, and fellow of the American College of Surgeons. He was a consultant in ophthalmology at Baylor University Hospital, Parkland Hospital, and the Medical Arts Hospital. In 1916 he received the degree of doctor of laws from Baylor University. Dr. Cary was a builder of medical buildings and institutions, a director of many corporations, and president of several others. His name was associated with the development and use of the Medical Arts Building in Dallas. Dr. Cary was head of Cary Clinic and contributed to the literature of ophthalmology.



EDWARD HENRY CARY, 1872-1953

Spalding, Edward D., ⊕ Detroit; born in Detroit Dec. 29, 1892; Johns Hopkins University School of Medicine, Baltimore, 1918; interned at Baltimore City Hospital and served a residency at New Haven (Conn.) General Hospital; professor of clinical medicine at Wayne University College of Medicine; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; member of the Detroit Academy of Medicine and the Detroit Medical Club; immediate past president of the Wayne County Medical Society and Michigan State Medical Society; Alternate Delegate to the American Medical Association; served overseas during World War I; during World War II served with the Harper Hospital unit as chief of medicine with duty in Casablanca, Oran, and Naples; later in the war attained the rank of colonel, and was medical consultant to the Fifth Army; attending physician and chief of division of cardiology, Harper Hospital; attending physician, City of Detroit Receiving Hospital; consultant in medicine, Veterans Administration Hospital in Dearborn and Charles Godwin Jennings Hospital; consultant in cardiology, Herman Kiefer Hospital; aged 60; was shot and killed Nov. 30, by a mental hospital escapee.

Woodyatt, Rollin Turner ⊕ Chicago; born in Chicago June 3, 1878; Rush Medical College, Chicago, 1902; appointed associate professor of medicine at his alma mater in 1912; later clinical professor at the University of Chicago, and chairman of the department of medicine at his alma mater; clinical professor of medicine emeritus (Rush) University of Illinois College of Medicine; specialist certified by the American Board of Internal Medicine; honorary president of the Chicago Diabetes Association; past president of the Association of American Physicians and the American Society for Clinical Investigation; member of the Central Society for Clinical Research, American Diabetes Association, the Endocrine Society, American Society of Biological Chemists, American Chemical Society, Sigma Xi, Sigma Chi, and Phi Rho Sigma; served during World War I; for many years on the staff of the Presbyterian Hospital; died in the Wesley Memorial Hospital Dec. 17, aged 74.

Milliken, Nathan Townley ⊕ Norwich, Vt.; born in Canandaigua, N. Y. May 4, 1906; Yale University School of Medicine, New Haven, 1932; certified by the National Board of Medical Examiners; specialist certified by the American Board of Internal Medicine; fellow of the American College of Phy-

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⊕ Indicates Member of the American Medical Association.

sicians; assistant professor of medicine at Dartmouth Medical School in Hanover, N. H.; served during World War II; on the staff of the Hitchcock Clinic in Hanover, N. H.; consultant at the Veterans Administration Hospital in White River Junction, Vt.; affiliated with Mary Hitchcock Hospital in Hanover, N. H., where he died Aug. 9, aged 47, of carcinoma of the lung.

Abbott, Fred Edgerton ⊕ Oceanside, Calif.; Rush Medical College, Chicago, 1908; served during World War I; died in Santa Ana Sept. 24, aged 71, of coronary insufficiency.

Alderson, James, Strawberry Point, Iowa; Northwestern University Medical School, Chicago, 1891; formerly practiced in Dubuque, Iowa, where he was mayor, president of the board of education, member of the city council, and superintendent of the Finley Hospital; died Nov. 2, aged 89, of coronary occlusion.

Alleman, Frank ⊕ Lancaster, Pa.; Jefferson Medical College of Philadelphia, 1896; also a graduate in pharmacy; fellow of the American College of Surgeons; served as president of the board of health; past president of the Lancaster City and County Medical Society; an honorary member of the staff of Lancaster General Hospital, where he died Nov. 10, aged 82, of pulmonary embolus following operation for carcinoma of the kidney.

Collins, Burnett Charles, New York City; Long Island College Hospital, Brooklyn, 1894; fellow of the American College of Surgeons; served on the staffs of the Brooklyn Eye and Ear Hospital and the Swedish Hospital; died Nov. 17, aged 81, of heart failure.

Dalton, William Bart ⊕ Gordonsville, Tenn.; University of Louisville (Ky.) Medical Department, 1894; past president of the Smith County Medical Society; died in Nashville Nov. 1, aged 83, of cerebral thrombosis.

Emanuel, Max ⊕ Vineland, N. J.; Medizinische Akademie Düsseldorf, Düsseldorf, Germany, 1928; affiliated with Newcomb Hospital, where he died Oct. 31, aged 50, of cerebral occlusion.

Etz, Samuel Irving, New York City; Columbia University College of Physicians and Surgeons, New York, 1948; served during World War II; interned at the Boston City Hospital; assistant resident, department of obstetrics and gynecology at the New York Hospital; died Nov. 5, aged 28.

Finch, Henry C., ⊕ Anadarko, Okla.; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1923; area medical officer, Bureau of Indian Affairs; served during World War II; died in Kansas City, Mo., recently, aged 54.

Fox, William Garfield ⊕ Lancaster, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1904; affiliated with Lancaster General Hospital, where he died Oct. 29, aged 74, of carcinoma of the lung.

Garnett, Alexander Yelverton Peyton ⊕ Washington, D. C.; University of Virginia Department of Medicine, Charlottesville, 1906; specialist certified by the American Board of Obstetrics and Gynecology; formerly associate professor of obstetrics at Georgetown University School of Medicine; affiliated with Garfield Memorial Hospital; died Nov. 4, aged 72, of coronary insufficiency.

Gessel, Udell Mathews ⊕ Los Angeles; Creighton University School of Medicine, Omaha, 1939; interned at Holy Cross Hospital in Salt Lake City; specialist certified by the American Board of Orthopaedic Surgery; served during World War II; affiliated with Orthopaedic and Los Angeles County General hospitals; died Oct. 23, aged 42.

Gilpatrick, Roy Hawkes ⊕ Cocoa, Fla.; Harvard Medical School, Boston, 1905; member of the Massachusetts Medical Society; formerly practiced in Nantucket, Mass., where he was on the staff of the Nantucket Cottage Hospital; died Oct. 11, aged 76.

Guest, John L., San Antonio, Texas; Barnes Medical College, St. Louis, 1901; died in Amarillo recently, aged 76, of cancer.

Harris, William Thomas ⊕ Troy, N. C.; Medical College of Virginia, Richmond, 1925; a trustee of the Greater University of North Carolina and a member of the board of directors of the Education Foundation; on the staff of Montgomery Memorial Hospital; died Oct. 21, aged 52, of coronary thrombosis.

Hursh, Robert McGuigan ⊕ Harrisburg, Pa.; Medico-Chirurgical College of Philadelphia, 1912; served during World War I; city health officer; died Nov. 13, aged 66.

Johnston, William ⊕ Boston; McGill University Faculty of Medicine, Montreal, Canada, 1897; died in the Boston City Hospital Oct. 15, aged 83, of cardiac asthma and rectal cancer.

King, Parks McCombs ⊕ Charlotte, N. C.; University and Bellevue Hospital Medical College, New York, 1902; first secretary and past president of the Mecklenburg County Medical Society; formerly on the faculty of North Carolina Medical College; died Oct. 11, aged 75, of acute coronary occlusion.

Lengby, Frederick Alexander, Minneapolis; University of Minnesota Medical School, Minneapolis, 1944; interned at Bethesda Hospital in St. Paul; served during World War II; died in Prescott, Wis., Sept. 18, aged 47.

Lewis, Edward James ⊕ Chicago; Rush Medical College, Chicago, 1907; formerly on the faculty of his alma mater; served on the staffs of Cook County and Michael Reese hospitals; died Nov. 25, aged 67, of coronary thrombosis and cerebral thrombosis.

Linder, Samuel, Brooklyn; Cornell University Medical College, New York, 1910; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; on the staffs of the Crown Heights and Jewish hospitals; died Nov. 17, aged 67, of acute coronary occlusion.

Loizeau, Charles Edward ⊕ Dubuque, Iowa; State University of Iowa College of Homeopathic Medicine, Iowa City, 1904; served actively for many years as an officer of the Northeast Iowa Area, Boy Scouts of America, and received the first Beaver award presented in the four county area; died in Mercy Hospital Oct. 23, aged 78, of left ventricular failure.

Miles, Charles Gardner ⊕ Brockton, Mass.; College of Physicians and Surgeons, Baltimore, 1908; past president of the Plymouth District Medical Society; served on the school committee and as city physician; died Oct. 3, aged 73, of coronary thrombosis and rheumatic heart disease.

Miller, Edward Alexander ⊕ Sagamore Beach, Mass.; Boston University School of Medicine, 1899; died Oct. 14, aged 81.

O'Neal, Orvil ⊕ Ripon, Wis.; St. Louis University School of Medicine, 1910; president of the medical staff of Ripon Municipal Hospital; died in Madison Nov. 24, aged 70, of duodenal obstruction and carcinoma of the pancreas.

Ostheimer, Maurice, Whitford, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1897; formerly assistant professor of pediatrics at his alma mater; served as secretary of the state milk commission and as chief diagnostician for the city board of health; died Oct. 28, aged 80.

Skillman, Wilbur Francis ⊕ Baltimore; University of Maryland School of Medicine, Baltimore, 1900; affiliated with Lutheran and Union Memorial hospitals; medical director at Masonic Home at Cockeysville; died Nov. 6, aged 75, of abdominal malignancy.

Wenrich, George Gockley ⊕ Wernersville, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1894; an Associate Fellow of the American Medical Association; served as a member of the board of health and treasurer of the school board; formerly director of the Wernersville National Bank; died Oct. 29, aged 82, of arteriosclerosis.

Wertz, Harry W., Montpelier, Ohio; Kentucky School of Medicine, Louisville, 1890; for many years county health officer; an officer in the Medical Corps, U. S. Army, during World War I; served as county coroner, a member of the Williams County Board of Health, and at Montpelier as a member of the boards of education and of public affairs and as village health officer; district surgeon for the Wabash Railroad; died Nov. 12, aged 84, of heart block.

Whitman, Clayborne Russell, Tuscumbia, Ala.; Birmingham Medical College, 1909; high school football physician and surgeon for the Southern Railway; affiliated with Colbert County Hospital in Sheffield; died Oct. 30, aged 70, of coronary occlusion.

GOVERNMENT SERVICES

ARMY

Korean Officers to Study at Brooke Hospital.—Six officers of the Republic of Korea Medical Corps have arrived at Brooke Army Medical Center, Fort Sam Houston, Texas, to spend six months observing medical and surgical techniques. Colonels Kim Hak Hyun and Oh Hi Su, who commanded the R. O. K. 5th and 15th Army hospitals, respectively, will observe methods of orthopedic surgery practiced at the hospital. Internal medicine will command the attention of Colonels Kim Nan Nym and Son Yong Su, who formerly headed the R. O. K. 3rd and 18th Army hospitals. The remaining two officers, Col. Kim Yong Eun and Lieut. Col. Lee Kyung Nak, will concentrate on general surgical methods at the hospital. Colonel Kim's last assignment was as deputy commandant of the R. O. K. Medical Field Service School, while Colonel Lee was formerly chief of professional services in the Office of the R. O. K. Surgeon General.

Certificates of Appreciation for Malaria Research.—At a ceremony in the Army Surgeon General's Office, Washington, D. C., Nov. 20, certificates of appreciation were awarded to Dr. Alf S. Alving, professor of medicine, University of Chicago, G. Robert Coatney, Ph.D., of the laboratory of tropical diseases, National Microbiological Institute, U. S. Public Health Service, and Dr. Ralph Jones Jr., assistant professor of research medicine, University of Pennsylvania School of Medicine, Philadelphia, for their research in connection with the development and testing of primaquine, an antimalarial drug. Dr. Alving worked with the wartime committee on medical research of the Office of Scientific Research and Development and later with the U. S. Public Health Service, and since 1950 directly with the Army's medical research and development program. He arranged and maintained a research facility in Stateville Prison at Joliet, Ill., where medical officers worked under his direction in studying a vast array of antimalaria drugs under controlled conditions. He also supervised tests on the toxicity of primaquine on volunteers at Fort Knox, Ky., and on more than 3,000 troops returning from Korea.

Dr. Coatney was awarded the certificate for outstanding patriotic civilian service to the Army from January, 1951, to June, 1953, when "he was in charge of malaria chemotherapy studies undertaken by the Surgeon General to explore the curative effectiveness of several 8-aminoquinolines in prisoner volunteers at Atlanta, Ga., and in Korean returnees at Fort Benning, and of other tests initiated to determine the antimalarial properties of daraprim," another antimalarial drug. Dr. Jones was awarded the certificate for outstanding patriotic civilian service to the Army from June, 1951, to April, 1953, when "he was responsible for supervising the clinical testing of primaquine as a curative drug for Korean vivax malaria in Army hospitals at Fort Knox, Fort Meade, Camp Breckinridge, Fort Dix, and in the Naval Hospital at the Marine Base at Camp LeJeune."

DEPARTMENT OF DEFENSE

Society of Medical Consultants.—The Society of Medical Consultants to the Armed Forces held its eighth annual meeting at Walter Reed Army Medical Center, Washington, D. C., Nov. 23. Dr. John Minor, chief of medical service at Emergency Hospital, Washington, D. C., president of the society, spoke of the problems confronting consultants to the military services. Other speakers were Gen. Matthew B. Ridgeway, U. S. Army Chief of Staff; Major Gen. George E. Armstrong, Surgeon General of the Army; Rear Adm. Clarence J. Brown (MC), U. S. N., assistant chief of the Bureau of Medicine and Surgery; Col. Oscar S. Reeder (MC), U.S.A.F., deputy director of professional services, Office of the Surgeon General; Dr. Stanhope Bayne-Jones, technical director of research, Office of the Army Surgeon General; and Col. Joseph R. Shaeffer (MC), chief surgical consultant, Office of the Army Surgeon General. At the evening dinner, which was held at the officers' mess, the speaker was Major Gen. Guy B. Denit (MC), retired.

VETERANS ADMINISTRATION

Residencies in Neurology Available at San Francisco.—Residencies in medical neurology are available at the U. S. VA Hospital, San Francisco, beginning July 1, 1954. The residency program is under the direction of the Combined Stanford University Medical School and University of California School of Medicine Deans' Committee. The training is fully accredited by the American Board of Psychiatry and Neurology for a period of two years.

MISCELLANEOUS

Psychiatric Interns and Residents Wanted.—The U. S. Civil Service Commission has announced a new medical officer examination for filling the positions of rotating intern, $2,800 a year, and resident in training in psychiatry and in neurology, $3,400 to $4,200 a year, in St. Elizabeths Hospital in Washington, D. C. Appointments are to begin on July 1, 1954. This hospital is a federal psychiatric hospital with about 7,000 patients.

Appropriate education is required, plus, for the resident positions, successful completion of a full year's internship. No written test is required. Applicants must not have passed their 35th birthday (waived for persons entitled to veteran preference). Applications will be accepted by the Executive Secretary, Board of U. S. Civil Service Examiners, St. Elizabeths Hospital, Washington 20, D. C.

Positions Open in Food and Drug Administration.—The Food and Drug Administration of the U. S. Department of Health, Education, and Welfare is actively recruiting medical officers to work in Washington, D. C. The positions pay an entrance salary of $7,040 to $9,600 with increments. The duties of the positions provide for medical decisions relating to food, drugs, devices, and cosmetics, as well as participation in the medical phases of legal actions against violative products. For further information write to Dr. Irvin Kerlan, Acting Medical Director, Food and Drug Administration, Washington 25, D. C. Interested physicians should also file for Medical Officer Examination, Examining Circular EC-24, issued April 5, 1950, with the U. S. Civil Service Commission, Washington 25, D. C., stating special preference for a position with the Food and Drug Administration.

Psychiatrists and Psychologists Needed.—The U. S. Attorney General has instructed the director of the Federal Bureau of Prisons to implement the Youth Corrections Act as provided by Public Law 865, 81st Congress (Section 5005-5024). The federal correctional institution at Ashland, Ky., probably will be designated as the first diagnostic and treatment center for these youthful offenders. It started receiving commitments Dec. 1, 1953, under the Youth Corrections Act. Other centers will be designated as the law is utilized by federal judges. Psychiatrists and psychologists with special training or particular interest in intensive study and treatment of youthful offenders are needed. Psychiatrists and psychologists with Ph.D. degrees will be employed as commissioned officers of the U. S. Public Health Service; psychologists who have special qualifications but who have not obtained Ph.D. degrees will be employed under the Civil Service Commission. Persons who accept a commission with the U. S. Public Health Service can thereby fulfill Selective Service obligations. Those interested should correspond with the Medical Director, Bureau of Prisons, Washington 25, D. C., or the Division of Commissioned Officers, U. S. Public Health Service, Washington 25, D. C.

FOREIGN LETTERS

DENMARK

Centralization of Treatment of Tetanus.—Recent correspondence in the Danish medical press suggests that the treatment of tetanus would be more effective if patients with this disease could be centralized in hospitals provided with a specially trained staff and special facilities. Isolated reports, each of only a few cases, show that in some hands barbiturates and various anesthetics are effective, while other reports reflect the modern tendency to give curare to ensure relaxation of muscles without inducing respiratory paralysis. Scarcely 50 cases of tetanus are reported in Denmark every year, and the principle of centralized treatment already applied to narcotic poisoning and poliomyelitis would be advantageous in the treatment of this disease because the prognosis depends largely on the highly technical skill with which it is treated. Acidosis, dehydration, anuria, and shock are among the many factors that may decrease the chance for survival, and it is only the well-equipped hospital with special provision for artificial ventilation of the lungs and other measures that can meet every call on it satisfactorily.

A small number of patients with tetanus (93 in 12 years) have been treated at the Blegdam Hospital, which has lately acquired an international reputation for pioneer work in the treatment of poliomyelitis. Twenty-eight of the 93 patients died. With the successful use of positive pressure ventilation in treating poliomyelitis in mind, this treatment has lately been used in tetanus. Three members of the staff of this hospital, Drs. B. Björneboe, Björn Ibsen, and Steen Johnsen, have recently reported the case of a 10-year-old boy whose recovery from tetanus may well be traced to the excellent treatment he received. Conditions hitherto regarded as hopeless can now be cured when curare is combined with tracheotomy, positive pressure ventilation, antibiotics, restoration of the fluid balance, and other devices for preventing and combating shock. Such skillful combined treatment is not available in many small hospitals.

Treatment of Cerebral Apoplexy.—Danish vital statistics rank cerebral apoplexy as the third commonest cause of death following only heart disease and cancer. According to some statistics, 70 to 80% of all patients with apoplexy died soon after the onset. At least two large Danish hospitals recognize the importance of a neurological examination in the diagnosis and treatment of apoplexy and admit these patients directly to the neurological department. This rule has been applied for several years in the Frederiksberg Hospital from which a recent report is published in *Ugeskrift for Laeger* for Oct. 15, 1953, by Dr. T. Dalsgaard-Nielsen. The report deals with about 1,300 patients treated in the period from 1940 to 1952. On admission to the neurological department of this hospital, the blood pressure, hemoglobin, blood sugar, and blood urea levels, Wassermann reaction, temperature, pulse, respiration, and urinalysis of every patient are recorded. This study shows a mortality lower than that hitherto associated with this condition. To prevent phlebitis, hypostatic pneumonia, and bed sores, the patients were allowed out of bed as soon as possible, and passive movements with massage were started on the first day. Soon afterward, active movements and occupational therapy were encouraged, and the patient was taught to walk with the support of another person or a cane. To avoid collateral edema of the brain, dehydration was encouraged by giving magnesium sulfate by the mouth and, in many cases, an intravenous injection of 50 ml. of a 50% solution of dextrose. Morphine, scopolamine, and large doses of other sedatives were consistently avoided, and in no case was surgery attempted. It was hoped that modern refinements of diagnostic tests would facilitate the differential diagnosis of cerebral hemorrhage, thrombosis, and embolism, but in many cases it was not possible to draw the line clearly between these conditions. It is pointed out in a leading article in the same issue that the former rules with regard to the differential diagnosis are no longer valid. We can no longer trust implicitly in the old teaching that the apoplectic patient who is unconscious must be suffering from a hemorrhage or that this diagnosis must be dismissed if the cerebrospinal fluid is clear.

Cancer Conference in Copenhagen.—In the autumn of 1953, the Danish National Association for Combating Cancer celebrated its 25th anniversary by holding an inter-Scandinavian conference. The occasion was marked by a special number of *Ugeskrift for Laeger* that contained among other things a statistical study of cancer of the lungs, with special reference to its possible connection with smoking. Professor Berven of Sweden noted that 25% of the patients with lung cancer in the Swedish records were not smokers. Dr. Pedersen of Norway expressed doubt of a real increase of the incidence of lung cancer in his country.

LONDON

Address on Orthopedics.—"An Even Keel in Orthopaedics" was the title of Mr. H. Jackson Burrows' presidential address to the section of orthopedics of the Royal Society of Medicine, which has just been published in the proceedings of the society (*Proc. Roy. Soc. Med.* 46:805, 1953). He said in part: "More than half the boys leaving public schools have lost their tonsils, and as many as four in five their foreskins. One wonders how many have been subjected to wedged shoes and so-called remedial exercises: certainly a very large number, and I am persuaded that it is scarcely possible to be a really nice young man without having endured these indignities of initiation. Normal children go through a phase of knock-knee, which soon disappears if they are lucky enough to avoid treatment; if, on the other hand, they have to contend with a man-made pes varus, they usually still get well, but much more slowly. I am not speaking of that textbook extravagance, the quarter-inch wedge; it is impossible; its victims never return, and so it continues to be sponsored. 'Remedial exercises' are a worse expedient than wedges, because more time-consuming, more expensive and more harmful. In one girls' school, five in every seven pupils perform daily the rite of 'flatters,' described in the school bill as remedial exercises. . . . When I was a child our nannies (beloved but now extinct race) made us turn our toes out; nowadays our physiotherapists would make us walk on the outer sides of our feet; far better nanny's valgus than physio's varus.

"In an age when cleverness is often prized above wisdom and integrity, the paramount importance of the patient's interests cannot be stressed too strongly. Some surgeons have found in the intervertebral disc not a jelly-like nucleus pulposus but a glittering nugget of gold: a great surgical advance has been discredited by misuse. . . . The development of arthroplasty of the hip is another great advance of our time, and a lasting memorial to Smith-Petersen, but it remains a truism that a surgeon makes provision for his later years by 'doing some cups' in his youth. A stern task confronts those who will have to deal with the failures of the Judet operator, so recent an operation as to be rarely proper in any but the aged. In our youth most of us have designed gadgets, and in our maturity have regretted them.

"How often has the pursuit of 'orthopaedic principles' converted a person who could sit but not stand into one who could stand but not sit? The supreme example is provided by the orthopaedic epitaph 'He died in perfect position.' I knew a natural exhibitionist with flail legs, who earned a reasonably happy competence by walking about race courses and football fields on his hands with his feet tucked into his waistcoat

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The items in these letters are contributed by regular correspondents in the various foreign countries.

pockets. Someone fused one knee and the patient was ruined. Later the other knee was fused, equally unwisely, and ultimately his legs were cut off through the thighs. In poliomyelitis an ill-judged lengthening of the tendoachillis notoriously can impose a caliper for life, but in spastic paralysis it can cause the most devastating multiple deformities. Bone operations on growing feet provide a more controversial subject. I believe them to be rarely excusable. When I was a registrar at the Royal National Orthopaedic Hospital I saw a master perform many arthrodeses most beautifully on young children's feet. Later, I inherited these patients and have seen the deplorable results, irredeemable by further surgery. Among [these] badly disabled children . . . such feet present some of our worst problems—feet that have been ruined less by the hand of disease than by the hand of man."

Quality in General Practice.—One of the paradoxes of the British National Health Service is discussed in an annotation in the *British Medical Journal* of Oct. 3. Although it might be thought that postgraduate training in clinical medicine would make a man preeminently suited to general practice, the difficulties experienced by many holders of higher qualifications, and especially the membership of the Royal College of Physicians, in entering general practice suggest that there are at least some established physicians who do not share this view. Many practitioners believe that a physician, however well qualified in medicine, must begin at the beginning when he starts in general practice and not expect to become immediately a principal in a large practice ready-made for him. Nor, indeed, is he likely to get far, if he enters general practice with an air of doing so as a last resort and with an expectation of obtaining part-time hospital work soon. Those responsible for his appointment to a vacancy, whether as assistant or principal, may well take care to assure themselves that he intends to devote his whole energy to general practice. But when allowance is made for those few registrars who take no heed of such criteria as these, there remain many applicants who believe that they have been turned down for no other reason than that they have done several years of postgraduate work in hospitals and achieved a higher qualification. There is more than a grain of truth in the jocular remark, which came from a good source, that "to the applicant for a general-practice vacancy the possession of a car is more important than the possession of a Membership of the Royal College of Obstetricians and Gynaecologists, the Fellowship of the Royal College of Surgeons, or—most dangerous encumbrance —membership of the Royal College of Physicians."

Although general practice is a special branch of medicine, its greater part is still clinical medicine. It may gather tributaries from other springs of knowledge, but a thorough foundation in general medicine can be nothing but an asset.

Mothers in Industry.—The effect on home life and child welfare of the increasing extent to which married women are seeking employment has caused concern in recent years, and a joint committee of the Medical Research Council and the Department of Scientific Research is investigating as a matter of urgency the role of mothers in industry. The views of the British Council of Churches have been summarized as follows: "(1) . . . married women will continue to be employed in industry and . . ., apart from the economic factor, many find satisfaction in such employment. In the case of mothers, however, the true interests of the child should have a prior claim over the other considerations. (2) This will normally mean that the mother who has the care of children not yet at school should not seek employment outside the home. (3) When the children are at school a number of considerations have to be weighed before the mother makes her decision. (4) If she decides to seek employment in industry, employers for their part should give more consideration to the possibilities of part-time work and more flexible hours of employment."

At the same time a deputation, representing various interested nursing organizations, including the Royal College of Nursing, has met with the Minister of Health. They stated that the provision for children in day nurseries and nursery schools was inadequate, and that a working party should be set up to consider the day-time care of children under 5. What is worrying a lot of persons, including physicians, is the extent to which the authority and responsibilities of parents are being shelved. What is the effect going to be on the rising generation if mothers, as well as fathers, go out to work every day, leaving their children in the care of day nurseries and nursery schools? Is the day coming when we shall have a Ministry of Child Culture that will organize national day nurseries all over the country into which infants will be placed the moment they are born, leaving the parents with no responsibility whatsoever for their future development? If family life is the basis of Western civilization, then the mother's place is at home at least as long as there are children of preschool or school age.

Accidental Poisoning in Childhood.—An analysis of 502 cases of accidental poisoning in children under the age of 12 years, seen at the Royal Hospital for Sick Children, Edinburgh, and the Royal Aberdeen Hospital for Sick Children in the years 1931-1951, has just been published (Craig, J. O., and Fraser, M. S.: *Arch. Dis. Child.* **28**:259, 1953). A tenfold increase in such cases occurred between 1931 and 1951; in 1931 there were 5 cases annually and in 1951 there were more than 50. The causative agents are classified as follows: group 1, household substances, e. g., disinfectants, fuels, cleaning agents, and insecticides, 203; group 2, medicines, including those intended for internal use, e. g., camphor, barbiturates, iron, and salicylates, 185, and those intended for external use, e. g., liniments and nose and eye drops, 75; group 3, vegetable matter, e. g., seeds and berries, 35; and group 4, source unidentified, 4.

Throughout the period covered by the investigation there was a steady increase in the number of cases due to household substances, but after 1948 there was a sudden sharp rise in the number due to medicines. More than half the cases (331) occurred between the ages of 1 and 3 years, and only 38 after the age of 5. About three boys were poisoned for every two girls.

The sharp rise in medicinal poisoning in 1948 is attributed to the increased prescribing under the National Health Service. It is pointed out that "many of the 'new' prescriptions have gone to homes where overcrowding and lack of experience in dealing with medicines might cause them to be poorly guarded."

Duke of Edinburgh in Royal College.—Another member of the Royal Family has honored the Royal College of Surgeons by accepting the honorary fellowship of the college. This is the Duke of Edinburgh, who visited the college on Oct. 20 to receive the diploma of fellowship. In his acceptance speech he took up a point made by the president of the college in his speech of welcome to the effect that surgery was both an art and a science. As a mere layman, he (the Duke) hoped that the practitioner artist and the scientific researcher would always continue to work in close harmony. He also expressed satisfaction in becoming an honorary surgeon, because he felt that, if ever he came under the surgeon's knife, the surgeon would remember that he was operating on a colleague.

Tablet to the Memory of John Radcliffe.—The unveiling of a stone tablet to the memory of John Radcliffe in the University Church of St. Mary, Oxford, on Oct. 17, was described as "an act of reparation to the memory of a great benefactor of the University." John Radcliffe, one of the best known physicians at the turn of the 17th century, attended several members of the Royal Family. In one of his more caustic moments Osler described him as the man who was "remembered, first by the Gold-headed Cane, second by never having written a line, and third by the superb monuments which exist to his memory." He was a graduate of Oxford and his will made large bequests to the university, where his name is perpetuated in the Radcliffe Infirmary, the Radcliffe Observatory, and Radcliffe Travelling Fellowships. He died in November, 1714, and was buried in St. Mary's Church. For many years the exact location of his grave was not known. About 1820, however, on opening a grave near the supposed spot, a gold coffin-plate was found that bore the simple inscription: John Radcliffe, M.D., died November 1, 1714, in the 65th year of his age. This was copied and engraved on the stone floor immediately over his place of burial. Everyone was under the impression that adequate honor had been done him, until quite recently. Dr. C. R. Hone, a former Bishop of Wakefield where Radcliffe was born, discovered that Radcliffe had expressed the wish that a tablet should be erected to his memory in the church. This wish was not fulfilled immediately and eventually was forgotten. It was in fulfillment of this almost 250-year-old wish that the memorial stone has now been unveiled and dedicated.

Royal Commission on Mental Illness.—The Prime Minister has just announced in Parliament that a Royal Commission is to be set up "to inquire as regards England and Wales into the existing law and administrative machinery governing the certification, detention, care (other than hospital care or treatment under the National Health Service Acts, 1946-52), absence on trial or license, discharge and supervision of persons who are, or are alleged to be, suffering from mental illness or mental defect; . . . to consider as regards England and Wales the extent to which it is now, or should be made, statutorily possible for such persons to be treated, as voluntary patients, without certification; and to make recommendations."

TURKEY

New Law Pertaining to Illicit Traffic in Narcotics.—Before World War I drug addiction was rarely encountered in Turkey. With the influx of Russian refugees in 1919, addiction, mostly to cocaine, appeared and spread. During the occupation, 1918 to 1923, it was difficult to curb illicit traffic in narcotics, and it became necessary to set aside a pavilion for the treatment of drug addicts at the Istanbul Bakirköy mental hospital. In recent years, drug addiction has greatly increased. From 1940 to 1949, 1,543 patients were treated for drug addiction at this hospital. In 1947, about 5,000 persons were using drugs or narcotics; it is estimated that there are from 25,000 to 30,000 doing so today. The extent of drug addiction among school children has not been ascertained.

The amendment of the drugs and narcotics law that came into effect this September provides that persons who violate the regulations pertaining to the legal production of narcotics or who engage in illicit production or illicit import or export, or who attempt to do so will be sentenced to not less than 10 years of hard labor and from 3 to 5 years of exile (under police supervision) after expiration of the term and a fine of 10 Turkish pounds for each gram of drug; the fine is to be not less than 1,000 pounds. If the drugs concerned are heroin, cocaine, morphine, or hashish, the offender is sentenced to hard labor for life. A person attempting to form an organization for the purpose of perpetrating any of the above-mentioned crimes and his associates will be sentenced to five years of hard labor; more than two persons are considered an organization. In the event of an established organization and active participation and if heroin, cocaine, morphine, or hashish are concerned, the death sentence is to be pronounced. For persons, and those acting as intermediaries, guilty of selling drugs to minors or persons not responsible for their actions, the penalty for the leader is raised by one-sixth and if narcotics are concerned the death sentence is given. For second or habitual offenders the penalty is raised by one-half, and if narcotics are concerned the death sentence is pronounced. All property of convicted persons is confiscated. Persons who, within the country, violate the regulations of the legal production and sale of drugs and narcotics or engage in their illicit production, buy, conceal, or transfer such goods, facilitate the use of narcotics by supplying quarters or otherwise assist in furthering the use of narcotics, or act as intermediaries will be sentenced to not less than five years of hard labor, from two to five years of police supervision in banishment after expiration of the prison term, and a fine of 10 pounds for each gram of drug; the fine is not to be less than 500 pounds. If the drugs concerned are heroin, cocaine, morphine, or hashish the offenders will be sentenced to 10 years of hard labor and a fine not less than 1,000 pounds and not less than three years banishment. Persons sheltering drug addicts are to be sentenced to from three to five years in prison and a fine of from 100 to 1,000 pounds. Second offenders will receive, in addition, a banishment sentence of not less than one year. By court decision and on the recommendation of a physician, drug addicts are sent to a hospital for treatment and kept there until recovery, after which they may be kept under police supervision for from 6 to 12 months. Persons who have participated in the above-mentioned crimes, but give information before that information is otherwise available to the police will have their sentence reduced. If the informers assistance leads to the arrest and conviction of their accomplices, the death sentence of an informer may be converted to hard labor for 15 years, a sentence of hard labor for life to not less than 10 years of hard labor; other sentences will be reduced by one-half.

If physicians, chemists, pharmacists, dentists, proprietors, or directors of laboratories or concerns manufacturing pharmaceuticals, veterinarians, civilian or military sanitary inspectors, trained or practical nurses, or midwives are guilty of the above-mentioned crimes, a sentence to hard labor for life shall be converted to a death sentence; if a temporary sentence to hard labor is pronounced, the sentence and the period of banishment is raised from one-third to one-half. The convicted persons will be ineligible for civil service and will have his license revoked for life. For persons who, because of the above-mentioned crimes, have caused a person to become a drug addict, to become ill, or to suffer injury, a sentence other than a death sentence or hard labor for life shall be raised one-third to one-half. If drug addiction has been occasioned in more than one person, the sentence is doubled, and, if a person died because of the addiction, illness, or injury, the death sentence will be pronounced.

Huntington's Chorea.—In *Dirim*, an Istanbul medical periodical, volume 28, number 8, Dr. Shükrü Hazim Tiner, chief of Istanbul Haseki Municipal Hospital, and his associate Dr. Ö. S. Dürüshken, reported a case of Huntington's chorea, which is rather rare in Turkey. Observation of involuntary movements of the 34-year-old man began five years ago when these movements did not interfere with the patient's work. They gradually increased until he could no longer work. Three years ago, the patient became irritable and easily excited. Fibrillary twitching at the mouth and convulsive movements of the feet appeared, but he was still able to walk. His childhood development was normal. He had not had any serious illness. He is married, had seven healthy children, and had never had gonorrhea or syphilis. His mother had undergone treatment for chronic chorea that was complicated by symptoms of mental disease and had died of Huntington's chorea. The mother's two sisters and the patient's two brothers also died of that disease. In the mother, the disease began at the age of 36, in the brothers between the age of 35 and 40. In the daughter of the maternal aunt, slight symptoms of the disease appeared at the age of 36. There is no history of oligophrenia, epilepsy, or other hereditary disease in this family that had seven members with Huntington's chorea in two generations. According to the patient, there was no such disease in his grandparents. In the patient's children and those of his brothers, there are as yet no symptoms of the disease.

Fifth International Congress of Tropical Medicine and Malaria.—The congress was held in Istanbul at the Shale Kiosk of the Yildiz Palace, the residence of the late Sultan Abdulhamid II, from Aug. 28 to Sept. 4 under the auspices of Celal Bayar, president of Turkey, and with Adnan Menderes, the Prime Minister, as honorary president. It was attended by 560 foreign delegates and their wives. Forty-two countries were represented. Prof. Ekrem Hayri Üstündag, the Minister of Health and Social Assistance, Prof. Fahreddin Kerim Gökay, the governor of Istanbul, diplomatic representatives, and the press attended. In his opening address, Prof. Üstündag gave a brief survey of malaria, once the chief public health problem in Turkey, which after 25 years of systematic antimalaria work and DDT spraying through the Marshall plan has finally come under control. There are no deaths now from malaria, and the index in malarial regions has dropped from 30.5 to 1.4%. Cholera and plague have not occurred for years. Enforcement of the vaccination law and border control have prevented outbreaks of smallpox. Campaigns against undulant fever, typhoid and typhus, trachoma and leprosy continue.

CORRESPONDENCE

SERPENTS' SENSE OF HEARING

To the Editor:—Now that processed snake venom, especially the neurotoxin of the cobra, is a recognized medicinal agent the following contribution to herpetological physiology and medical history may be of interest to physicians as well as to the general reader.

Snake charming is an art that has been practiced from very ancient times in Africa and the East. It often remains from generation to generation the profession of certain families. It is sometimes practiced for alleged useful purposes, for example, to clear a house of unwelcome snake visitors. For the most part, however, it is employed as a form of popular amusement in India and other countries. The frequent use of a musical pipe or fife and the way in which certain snakes, especially the cobra, seem to respond to the sounds are facts of interest to naturalists, in spite of the claims of some authorities that snakes are deaf. The chief species of snake susceptible to charming is the cobra, namely, the Indian hooded cobra or Naja naja tripudians and the Egyptian cobra or Naja haje. Serpents of all kinds are mentioned in the Hebrew scriptures under various names. Those who are interested in the subject might refer to a paper published in the *Bulletin of the History of Medicine* (15:359 [April] 1944).

There is no doubt at all from the empirical point of view that charming has been practiced very successfully, especially on cobras, from the most ancient times. The most famous reference to such snake charming is in Psalm 58, verse 5.

> Their poison is like the poison of a serpent:
> They are like the deaf adder that stoppeth her ear;
> Which will not hearken to the voice of charmers,
> Charming never so wisely.

This remarkable asseveration is especially appropriate at the present time when such wicked creatures, not deserving the name of human beings, perpetrate the most vicious and revolting crimes, as kidnapping children and cruelly murdering them in spite of entreaties and prayers of parents and offers of generous ransoms. How appropriate the psalmist's expression that these serpents deliberately stop up their ears and turn a deaf ear to avoid being "charmed" and softening their hearts! Another biblical reference to snake charming is in Jeremiah 8, 17:

> For, behold, I will shed serpents' basilisks among you
> Which will not be charmed.

Still another is in the Book of Ecclesiastes 10, 2:

> If the serpent bite before it is charmed,
> Then the charmer hath no advantage.

There is also a reference to charm in the Apocryphal Book of Ecclesiasticus 12, 13. It is well to note that the above verse 5 in Psalm 58 implies conversely that snakes and especially cobras, which are employed for the most part by snake charmers, do respond to sounds and are not ordinarily deaf—this in spite of the assertion by some zoologists that snakes anatomically speaking do not possess a highly developed sense of hearing. They suggest that the charming is done by "vibrations," but physiologically are not all sounds vibration waves?

In Shakespeare there are three references to the popular belief of deafness among serpents. One is in King Henry VI, part 2, act 3, scene 2, lines 76 and 77.

> What, art thou, like the adder, waxen deaf?
> Be poisonous too, and kill thy forlorn queen.

Another passage is found in Troilus and Cressida, act 2, scene 2, lines 168 through 173:

> The reasons you allege do more conduce
> To the hot passion of distemper'd blood
> Than to make up a free determination
> 'Twixt right and wrong; for pleasure and revenge
> Have ears more deaf than adders to the voice
> Of any true decision.

Finally, there is another line in Sonnet 112, lines 9 through 11:

> In so profound abysm I throw all care
> Of others' voices, that my adder's sense
> To critic and to flatterer stopped are.

The question as to the acuity of serpents' hearing is of timely interest in connection with an incident that occurred recently in Springfield, Mo., where a number of cobras were let loose or escaped from the premises of a snake dealer and keeper. Some of these were recaptured, but others were not caught. A novel stratagem was then thought of. A phonograph record of a snake charmer's "music" or cacophony was obtained from India and played on a phonograph with a loud speaker in Springfield. According to the news dispatches, this lured out the missing hooded cobra, which, according to witnesses, responded to the sounds (*St. Louis Post-Dispatch,* 1953). This report of an authenic episode speaks strongly in favor of a well-developed sense of hearing in the cobra; contrary to assertions of some skeptics, that the "charming" of snakes is not done by sounds but by the gesticulations of the charmer.

In order to conclude the argument in favor of a well-developed sense of hearing in cobras, I interviewed five well-educated Hindu physicians from different parts of India. These scientists were doing graduate work at the Sinai Hospital in Baltimore. Each one of these physicians expressed his firm conviction that the charming of cobras is a well-known empirical and established fact and that there was no doubt that these serpents responded to certain musical tones. Furthermore, I was told that certain forms of music practiced by the charmers excited the reptiles more than other forms. Finally, I learned that it was a common practice among natives of India to caution children, when out playing in the dark in the countryside, that they should not sing lest their sounds attract the dangerous reptiles. Thus, it seems that, as between Shakespeare and the scriptures, the former was merely repeating a popular misconception and superstition about deafness of snakes, whereas, the psalmist employed a metaphor from natural history, which, as in so many other passages of the scriptures, was absolutely correct both literally and figuratively.

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SURGICAL HYPOTHERMIA

To the Editor:—There is need to correct inaccuracies in the recent literature on surgical hypothermia. Lewis (*Surgery* 33:52, 1953) refers first to Fay and "a little later, regional refrigeration." My work (*Tr. A. Am. Physicians* 52:189, 1937; *Surg., Gynec. & Obst.* 67:746, 1938; *Surgery* 3:893, 1938; *Arch. Surg.* 38:155 [Jan.] 1939) antedated Fay experimentally and clinically, though the two lines of work were separate and independent. Lewis continued that regional refrigeration "seems no longer to be of interest. Other anesthetic agents are better." This statement is true to the extent that local refrigeration has been largely abandoned, unjustifiably, and mostly by surgeons who find refrigeration inconvenient because they have not acquired the technique. Skilled anesthesia of other kinds may sometimes not aggravate shock, but refrigeration is the sole method that can prevent shock. Lewis accepts the benefits of systemic hypothermia while ignoring the shock still produced unnecessarily by surgeons who perform severe limb operations without hypothermia.

Fay's valuable work was largely neglected. Others besides myself have supported his original suggestion of reduced body temperature in shock treatment, but the harmful tradition of warming shocked patients still largely prevails. He did not propose hypothermia for prevention of shock during operations. I adopted Fay's method for this purpose experimentally. Lacking such surgical collaboration as Crossman had furnished for local refrigeration, my paper had to be limited to animal experiments without clinical trials. But this paper (*Anesth. & Analg.* 29:97, 1950) gave the essential facts of hypothermic reduction of shock and of the need for anesthetics and the lengthened time for which anoxia can be tolerated. The reduced blood pressure that operators seek to attain with more or less risky drugs is produced automatically and safely by low temperature. The weakness or dangers from Fay's prolongation of "hibernation" for several days do not arise from a few hours of radical cooling, which is remarkably well borne. I pointed out precisely the operations for which this method should serve, including some for which surgeons have not yet utilized it. It should be routine for all extremely long operations on children, including the surgical separation of Siamese twins. This priority in laying down the basic principles of hypothermic surgery has remained unmentioned by all subsequent writers, including the most recent (*J. A. M. A.*, **153**:1081 [Nov. 21] 1953).

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CORTISONE AND THROMBOEMBOLISM IN SHOULDER-HAND SYNDROME

To the Editor:—In a recent report in THE JOURNAL (153:788 [Oct. 31] 1953), Steinbrocker and associates recorded their extensive experience in the management of the shoulder-hand syndrome and presented a challenging comparison between sympathetic block and corticotropin and/or cortisone therapy. Although these authors found that steroid administration gave almost as good results as stellate block, they regard the latter as the treatment of choice for shoulder-hand syndrome. According to their view, the great advantages of sympathetic block are the rarity of contraindications, the usually shorter period of treatment without further maintenance therapy, and the reduced likelihood of complications. The preference of these authors for stellate ganglion block appears to stem primarily from their belief that cortisone or corticotropin may foster thromboembolic phenomena in some patients, especially those with vascular disease. Steinbrocker and associates cited two possible instances of thrombotic complications caused by hormone therapy in their series but frankly admit the possibility of chance occurrence. Since the duration of treatment with these hormones varied from two to six months, a significant incidence of thromboembolism is to be expected in any group of patients with abnormalities of the vascular system who are kept under observation for this period of time. In 17 patients with shoulder-hand syndrome following acute myocardial infarction (*A.M.A. Arch. Int. Med.* **97**:487 [April] 1953), we have found the employment of cortisone to be not only highly effective but also unattended by thromboembolic complications. In 13 of these patients, cortisone was not required after a period of three weeks. This optimistic experience could also be regarded as fortuitous had it not been confirmed by further observation in an extended series. To date, my associates and I have treated 86 patients with advanced cardiovascular and/or cerebrovascular disease with cortisone and have not encountered a single instance of a thrombotic or thromboembolic incident during or after the administration of this drug. In the total group, there were 8 additional patients with shoulder-hand syndrome after acute myocardial infarction, 34 with cerebrovascular occlusion with painful disabilities complicating hemiplegia, 12 with apoplectic stroke in the acute phase of the attack, 11 with angina pectoris, 2 with acute myocardial infarction and atypical pneumonia, and 2 with congestive heart failure.

The inescapable conclusion from this experience is that the risk of thrombotic complications from the use of cortisone, even in large dosage, must indeed be small or insignificant. Moreover, there appears to be no basis for the suggestion that anticoagulants might be administered prophylactically with benefit in patients with vascular disease requiring cortisone therapy. Such preventive treatment would undoubtedly introduce a greater morbidity and mortality than that which its administration can conceivably ward off. In shoulder-hand syndrome, the excellent response to cortisone (particularly in the relief or suppression of pain), the ease of its administration, and the relative safety when simple precautions are taken lead us to believe that it should be the treatment of choice when nonspecific conservative measures fail to bring relief. The employment of stellate ganglion block, on the other hand, offers an additional approach that may prove most helpful when cortisone is ineffective or when absolute contraindications to steroid therapy exist.

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FILTERING BLOOD BEFORE TRANSFUSION

To the Editor:—There is a difference of opinion over the merits of filtering blood immediately before transfusion or administering blood to the patient through an intravenous set with a filter "in the line." In the prefiltering method, the blood is filtered by means of a closed system through a regulation filter and short length of tubing. The tubing leads into an inverted vacuum bottle. The bottle is inverted to prevent any marked agitation. The last few drops of blood from the filter are used for "rapid cell typing." The blood can then be administered through the usual intravenous set without additional filtering at the bedside. The alternate method requires that the blood be administered to the recipient with a special intravenous set having a filter in the line.

The advantages of prefiltering the blood are: 1. "Filter trouble," occasioned by clots or fibrin blocking the filter and preventing the administration of blood, is avoided. This is particularly vital in the operating room where delays can be disastrous; at the bedside it can be the cause of much exasperation and difficulty. This preliminary filtration is done in several hospitals on the request of the surgeon. These requests usually are made by surgeons who have had unfortunate experiences with "blocked" transfusions in the past. 2. It is not necessary to change the intravenous set or tubing, as the same set is used for administration of blood, sodium chloride solution, and other fluids. In patients maintained for days by intravenous therapy, frequent manipulation of the intravenous set can damage the veins and cause subsequent thrombosis. Repeated venipunctures may be difficult. Breaks in sterility are caused by these maneuvers. It is necessary to flush the tubing through with plain isotonic sodium chloride solution before and after transfusion as a precaution. Flexibility in administration of the various fluids is thus maintained. 3. The most important factor is that this technique provides an opportunity to check the type of the blood actually being administered to the recipient, right from the original container. This avoids one of the weak links in the check in operation of a transfusion service—the inability to compare the pilot tube type to the blood in the bottle. There have been no hemolytic reactions due to this sort of "confusion" since this system has been in operation.

The disadvantages of prefiltering are: 1. There is increased cost due to use of an additional vacuum bottle. 2. There is a possibility of trauma to the cells occasioned by their transfer by vacuum to the empty container. Hemolysis is avoided by inverting the receiving bottle to prevent any marked agitation of the filtered blood. It would seem that these disadvantages are minor compared to the advantage of smoother transfusions, greater flexibility in manipulation of the set, and greater safety resulting from the opportunity to type the blood actually being administered. For these reasons we prefer the technique of prefiltering blood in the blood bank immediately prior to transfusion.

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COUNCIL ON MEDICAL SERVICE

This is the 11th in a series of studies made by the Committee on Indigent Care of the Council on Medical Service concerning local plans for medical care of the indigent. A general introduction to the series and the first of the Committee's studies (Erie County, New York) appeared in the May 10, 1952, issue of THE JOURNAL, *pages 188-191. The 10th study (Richmond, Va.) appeared in the May 16, 1953, issue of* THE JOURNAL, *pages 268-270.*

Medical Care for the Indigent in Vanderburgh County (Evansville), Ind.

This is a study of medical services available to the indigent and medically indigent population of Vanderburgh County, Indiana. Of the county's 160,000 residents, 130,000 live in Evansville, an industrial center with manufacturing plants producing automobiles, refrigerators, construction machinery, and various steel, plastic, and tobacco products.

ELIGIBLE POPULATION

Table 1 shows the number of clients eligible and those actually receiving medical care during an average month under the general and public assistance programs. All those eligible for assistance under these programs are automatically eligible for medical care at public expense.

ADMINISTRATION

For years the medical care of the indigent and medically indigent of Vanderburgh County was provided on a charity basis by individual physicians. In 1947, a survey of public opinion indicated that (1) the people of the county did not know that physicians received no pay for these services and that (2) the public favored a program whereby a token payment would be made for these services. A program was subsequently devised based on a contract between the county medical society and the Department of Public Welfare and the township trustees. The society members agreed to provide medical care for all properly certified indigent and medically indigent patients in the three local hospitals in return for a monthly token payment to the society. Individual physicians may also treat public assistance clients outside the hospital, and such care, to properly certified patients, is reimbursed by the Department of Public Welfare.

The attending physician determines what medical care will be provided to public assistance patients. The committee on indigent care of the medical society supervises the medical aspects of the program. This committee establishes fee schedules and drug lists; it meets with the Department of Public Welfare monthly to review unusual or expensive cases and the methods of therapy used in such cases. Subcommittees of this group at each of the three hospitals attempt to keep hospital costs down and supervise care of the indigent in the hospital. The case workers of the welfare department certify those clients eligible under Indiana law to receive grants for old age assistance, blind assistance, and aid to dependent children. This department also administers the assistance grants for the Indiana child welfare and crippled children programs.

The general assistance programs are administered at the township level by the township trustees, elected officials who are, according to Indiana law, "the overseers of the poor." The investigators of the trustees' offices certify eligibility of the clients. There are eight townships in the county; however, since Pigeon Township includes most of Evansville and provides almost all the township assistance in the county, it is the only one whose medical program will be discussed. The Pigeon Township trustee engages one white and two Negro physicians to take care of home and office calls of general assistance clients; no payments are made to private physicians for general assistance cases treated outside the hospital. For hospital care, the township trustees have the same arrangement with the medical society as has the welfare department.

SERVICES AVAILABLE

In general, all clients of the welfare department are eligible for the same medical services. Freedom of choice of physician is provided for home and office care; hospitalized cases are under the care of the staff physicians at the hospital selected by the patient. Frequently the Department of Public Welfare learns the names of physicians on staff service at the selected hospital and sends the patient to one of these physicians for a "work-up" before hospital admittance. The attending physician may prescribe such drugs and special appliances as he feels are necessary; however, physicians are urged to use drugs on the approved list. If a drug not on this list is prescribed and exceeds by 10% or more the cost of the comparable drug on the list or is not comparable with any drug on the list, the prescription must be signed by two physicians. Prescriptions for cortisone and other expensive drugs must have the signatures of two physicians and must also be approved by the society's indigent medical care committee.

Complete dental care is available for all public assistance clients, except that old age assistance clients are not provided with dentures. Eye treatment is provided for all welfare department clients. The aid to the blind program includes remedial measures; old age assistance clients may also receive eye treatment when medically necessary. Nursing services in the patient's home are provided by the Public Health Nurses Association. Nurses are paid according to a fee schedule for such services to old age assistance and aid to the blind patients; no charge is made for aid to dependent children patients. In emergencies, the Physicians and Nurses Exchange can approve medical care for public assistance clients, since the welfare department provides this organization with up-to-date lists of all welfare recipients.

TABLE 1.—*Average Number Eligible and Receiving Medical Assistance, March, 1952 (Estimated)*

	Eligible	Recipients
General Assistance	1,847	612
Public Assistance	1,865	799
Old Age Assistance	1,465	638
Aid to Dependent Children	328	134
Aid to the Blind	72	27

The public assistance patient has freedom of choice of pharmacies, but the pharmacy must be certain of authorization before it fills a prescription. In the hospitals, no distinction is made between assistance patients and other patients; however, assistance clients are hospitalized in the least expensive rooms that medical conditions permit. All hospital facilities may be utilized for the assistance patient, including x-ray, laboratory, physiotherapy, and, at Protestant Deaconess Hospital, radioisotopic services. No restrictions are placed on the use of these services; the attending physician is the judge of the program of therapy. St. Mary's Hospital maintains a prenatal clinic that serves the indigent and also provides some postnatal services. During 1952, the clinic gave care to 58 patients on 360 visits. Protestant Deaconess Hospital maintains a crippled children's clinic for the indigent, employing the services of an orthopedist, a pediatrician, and a nurse. In addition to the officially provided services, the hospitals also care for many patients who do not qualify under one of the assistance programs but who are unable to pay for all their medical care. Patients under general and public assistance programs are cared for in nursing homes, rather than hospitals, whenever possible. Both physicians and hospitals cooperate in transferring patients to these homes as soon as medically appropriate, in order to decrease the cost of the programs. General assistance clients receive approximately the same services as public assistance clients, except for physicians' home and office calls, which are provided by the three township physicians, without freedom of choice.

PROVIDERS OF SERVICES

There are 174 physicians active in the county medical society, all of whom may provide home and office care to welfare department clients. Ninety per cent of the physicians participate in the program to some extent, although much of the work for the indigent is done by a few men. Most of the doctors in the medical society are on the staff of at least one of the three hospitals in the county, and these staff physicians provide all in-hospital care for the indigent. Township assistance clients receive home and office care from the three contract doctors of the township. All three hospitals participate in the program. Welborn Memorial Baptist Hospital has 116 beds; St. Mary's, 178 beds; Protestant Deaconess, 245 beds. St. Mary's and Protestant Deaconess provide some specialized clinic services, but none of the hospitals maintains an outpatient department. Convalescent care is provided through 17 state-approved nursing homes in the area. The Public Health Nursing Association provides home nursing to old age assistance and aid to the blind patients at a reduced rate. All pharmacies in the area are eligible to fill assistance prescriptions.

TABLE 2.—*Monthly Payments to Medical Society*

Department of Public Welfare	$300.00
Pigeon Township	750.00
Knight Township	150.00
Perry Township	120.00
Center Township	70.00
Two townships	7.50 each
Two townships	No payment
Total	$1,405.00 monthly $16,860.00 annually

PAYMENT FOR SERVICES

For the in-hospital care rendered by physicians, the Department of Public Welfare and six of the eight township trustees make monthly token payments to the Vanderburgh County Medical Society; the two townships that make no payment are too small and too poor to afford such payment. Table 2 shows the various monthly contributions; since Pigeon Township is the county's largest and contains most of the county indigent, it contributes more to the society than all the other townships together.

Private physicians who provide medical care to certified public assistance patients on home or office calls are paid by the welfare department according to a fee schedule agreed upon by the society's committee on indigent medical care and the welfare department. In January, 1954, the welfare department will begin limiting calls, whether home or office, to three per month unless prior authorization is obtained. The township trustee engages the services of one white and two Negro physicians to provide home and office care for general assistance clients. The white physician receives a salary of $225 per month, while the Negro physicians are paid $3.00 for each office call and $4.00 for a home call. Hospitals give no discounts for assistance patients but charge the Department of Public Welfare and the township trustees the full hospital rates for care rendered to indigent patients. Pharmacies also receive the full retail price for prescriptions; bills are presented monthly.

TABLE 3.—*Average Cost of Public Assistance Medical Care Per Month*

Program	Cost per Mo.	Per Eligible Client	Per Recipient
Old Age Assistance	$19,377.98	$13.23	$30.37
Aid to Dependent Children	2,571.42	7.84	19.19
Aid to the Blind	413.86	5.75	15.33
	$22,363.26	$11.99	$27.99

COSTS AND FINANCIAL SUPPORT

The expenditures of the Department of Public Welfare for the public assistance medical programs are given in table 3.

In addition to these expenditures, the department also supervises 72 children in foster homes; medical care for these children totaled $593.51 during the month of March, 1952. Pigeon Township provides approximately 80% of the general assistance care of the county; during 1952, 126 major operations and 38 minor ones were performed for indigent residents of the township under this program. The estimated value of medical services given by physicians to the indigent of all townships in the county during 1952 amounted to $45,000. The annual cost for medical care for assistance patients is shown in table 4.

The costs of the public assistance program are met by the state, with matching federal grants up to a monthly maximum of $55.00; the Department of Public Welfare's average assistance grant is less than this maximum. All funds necessary for medical care, in addition to those contributed by the state and federal governments, are provided by the state and county on a 60:40 ratio. Township funds to meet general assistance costs are raised by means of general property taxes.

SUMMARY

Vanderburgh County provides medical care for its indigent and medically indigent through a program based in part on contracts with the county medical society. Public and general assistance clients receive in-hospital care from staff physicians in return for a token monthly payment to the society; the payment is used to carry on society activities. All three of the county's hospitals are utilized in the two programs, and hospitals are paid full rates for their services. Both programs also use the county's 17 nursing homes and pay full retail prices for prescriptions, which may be filled at any pharmacy. The programs differ in nonhospital care: the welfare department's clients may receive home and office care from any physician and the physician will be reimbursed according to a fee schedule prepared by the society and the welfare department. The township trustees, who administer the general assistance program, provide home and office care through contract physicians.

TABLE 4.—*General Assistance Medical Costs Including Hospital Care, Pigeon Township, 1952*

Hospitalization		$71,342.58	
Out-patient care		667.35	
Payment to medical society		9,000.00	
Estimated value, hospital staff care			$35,000.00
		$81,009.93	
Total admissions	303		
Patient days		3,871	
Average stay	12.78 days		
Average cost per patient day		$20.93	

Public assistance clients must be certified as eligible by the welfare department before they can receive care. However, in emergencies when the department is not open, the Physicians and Nurses Exchange maintains an up-to-date list of welfare clients, so that physicians and hospitals can determine whether care is authorized at any time of day or night. General assistance clients must depend for emergency care on the township physicians and the hospital emergency rooms. Medical aspects of the program are supervised by the county medical society's indigent care committee, which helps work out fee schedules and approved drug lists, reviews and authorizes expensive procedures, and, through three subcommittees, helps keep down costs at the three hospitals.

The program seems to be operating to the satisfaction of the county medical society and the welfare department; 90% of the society members are participating to some extent. However, the township trustee is dissatisfied with the high cost of the program though not with the quality of care provided. The division of the county into eight townships, with each township responsible for its own indigent, causes some administrative shortcomings, such as the duplication of administrative functions and the variance in the amount of funds available for care in contiguous townships. As the township trustee is an elected official, and the responsibility for general assistance medical care is not spelled out in detail in the laws, a change in officials can give rise to some fluctuation in policy and services provided. An additional shortcoming in the township program is the lack of freedom of choice of physicians. Much of the success of the program is due to the physicians' interest in it. The society's indigent care committee has met with cooperation and success in the devising of and use of fee schedules and approved drug lists, and all agencies involved cooperate in keeping costs of the programs to a minimum.

BUSINESS PRACTICE

The following material is based on a public relations manual issued by the Public Relations Department of the American Medical Association.—ED.

RENDERING OF BILLS

In the past years doctors' bills were sent out bearing this familiar phrase, "For Professional Services," the sum owed, and nothing more. Often bills were mailed irregularly, if at all. Today patients expect to receive statements of their obligations. Most families plan their budgets around bills received on or about the first of the month. The physician is responsible for explaining in advance fees, including additional bills from other members of the medical team such as assistant surgeons and anesthetists, and for sending bills at regular intervals with charges itemized. The best way to explain medical charges is by itemizing medical bills. Patients are entitled to know what charges are for. As time elapses after treatment, the patient may forget that he was treated four times instead of three times. On the surface of an unitemized bill, it may appear to the patient that he has been overcharged. The simplest way to itemize bills is to allow space on the original statement below the "For Professional Services" line on which the secretary can list the separate charges for office, house, or hospital calls or for tests and treatment (fig. 1).

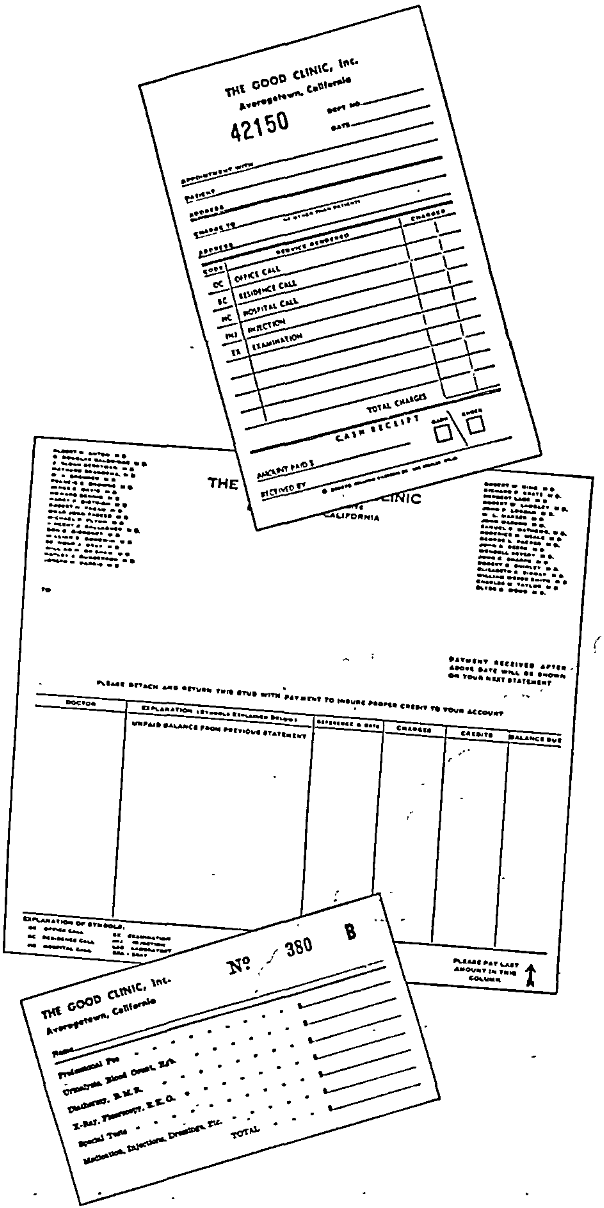
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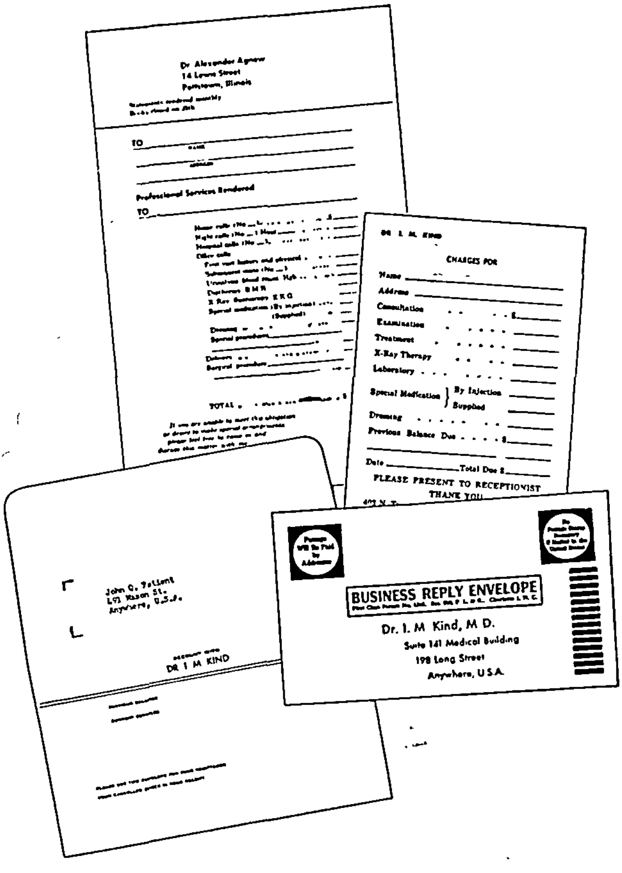
Fig. 1.—Several types of itemized bills.

A regular system of rendering statements should be used. Statements should be sent at least once each month. Some physicians send bills after treatment has been given; others bill at the first of each month. Others find it more satisfactory to mail statements on the first and the 15th of each month or to use the cyclical billing system used by department stores. Under this plan, statements are sent out to patients whose last names begin with certain letters of the alphabet on certain dates of each month, i. e., patients with names beginning with A through G receive statements on the first, patients with names beginning with H through N receive statements on the fifth, and so forth. Punctuality in billing encourages prompt payment. The use of self-addressed business reply envelopes (fig. 2) also encourages punctuality. If the physician is negligent and does not send a bill for several months after treatment, the patient may justifiably deduce that the doctor does not attach much importance to the bill and postpone payment, sometimes indefinitely. Patients also are entitled to know the date on which payment of their medical bills is due.


Dr Alexander Agnew
Professional Services Rendered
DR. I. M. KIND
CHARGES FOR
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Date
Total Due $
PLEASE PRESENT TO RECEPTIONIST
THANK YOU
BUSINESS REPLY ENVELOPE
Dr. I. M Kind, M D.
Suite 141 Medical Building
198 Long Street
Anywhere, U.S.A.
DR I M KIND

Fig. 2.—Itemized "charge slips" that may be given to the patient before he leaves the doctor's office or may be mailed in a combination statement-reply envelope.

When payments are sent in by check, it is not absolutely necessary for the doctor's secretary to mail a receipt, because the patient retains his check stub as evidence of payment. On the other hand, a thank-you note sent on receipt of payment goes a long way in promoting a better doctor-patient relationship. Cash payments received by mail should always be acknowledged promptly. Regular billing and itemizing of statements not only is a service to patients but is valuable to the physician, since prompt payments are usually forthcoming if these practices are followed.

THE LEISURE CORNER

TOOLS AND RULES FOR AMATEUR DESIGNERS

Many physicians gravitate to hobbies that require manual dexterity by virtue of their temperament, inclination, or aptitude. Cultivation of an interest in the handicrafts, they have found, depends on the attainment of aesthetic enjoyment as well as on actual manual accomplishment. This article, the first of a series to be devoted to various handicrafts, will attempt to familiarize the reader with basic concepts of decoration and ornament, with which to give both distinction and character to any structural form. What follows will be an elementary discussion of the tools and rules that will enable the prospective hobbyist to create decorative designs appropriate for use in any one of a number of handicraft fields. For purposes of clarification, distinction should be made between structural and decorative design. Structural design represents the form, proportion, and utility of an object. Generally speaking, one can accept structural design as being the contour line or the outline of the object. Decorative design, on the other hand, is that something that is added to or on the surface of a structural design without altering the shape, contour, or outline of the object. It represents that added beauty that a product might not otherwise possess, and it is that something extra that distinguishes articles of similar structure. Actually, a good decoration is no more than a pleasing arrangement of line, mass, and color. The lines that form the masses and the principles that make them pleasing when used in composition represent the tools and rules that are suitable for use by the amateur designer.

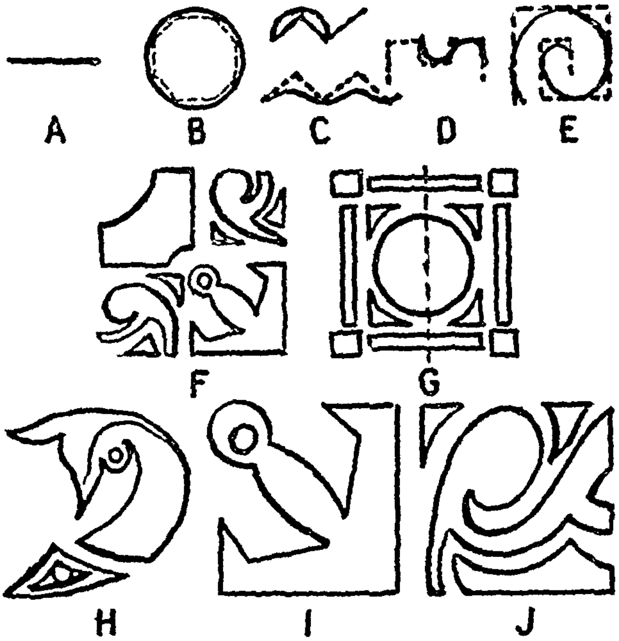

Fig. 1.—A—E, basic lines or tools. *C* shows zigzag, half circle, and wave. F—J, rules or principles demonstrated. See also fig. 2.

A logical place to begin the discussion of tools is with the *straight line* (fig. 1, *A*). It is very easy to visualize straight lines in combination, joining at angles of varying degrees so as to produce a triangle, square, hexagon, or octagon (*B*). If preferred, straight lines can be combined in chain-like fashion to produce a zigzag line (*C*) or embattled (*D*), appropriate for a border pattern. Still another variation is to start a straight line as if to outline a large square. After completing three sides, the fourth side is shortened and subsequent lines designed to form smaller squares within the original so as to produce the fret pattern (*E*). The octagon, zigzag, embattled, and fret provide the designer with the geometric basis by which necessary curved forms are developed to break the monotony of straight lines in a composition. In rounding off the corners of these figures, a curved series is developed. The octagon becomes a circle (*B*), the zigzag develops into a half circle or wave (*C*), the embattled produces the reverse curve (*D*), and the fret generates the spiral (*E*).

The rules for the amateur designer are those that govern natural and abstract composition alike. Good ornament can be achieved only by their use.

Proportion.—A pleasing proportion is achieved through the use of certain ratios between the various dimensions of masses, regulated distances between lines, and alternations between ornament and plain or background surface. Proportion, then, is harmony between parts of the ornament as well as between ornament and background (fig. 1, *F*).

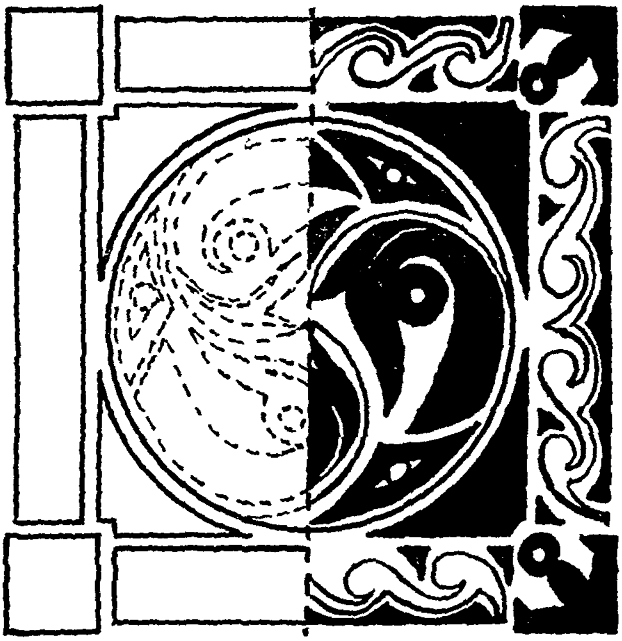

Fig. 2.—An ornament in which basic lines and principles are used.

Balance.—Pleasing balance is achieved in one of two ways. It can be symmetrical (fig. 1, *G*), derived "likesidedness" from doubling of any form on its axis, by absolute similarity on both sides of a piece of ornament. It can also be unsymmetrical (fig. 2), wherein similarity does not exist on each side of the ornament, but where different masses nevertheless appear to be of equal weight.

Emphasis.—A pleasing design must have a motif, an idea that dominates the composition and can be identified without appearing to stand alone. It is restful as opposed to harsh or strong contrast between motif and supporting masses (fig. 1, *H*).

Contrast.—A pleasing composition avoids monotony. It opposes a straight line with a curve and accomplishes a difference in form and arrangement without disturbing a restful feeling and an easy flow of lines and mass (fig. 1, *I*).

Unity.—A pleasing design shows perfect accord in all parts. Regardless of the variety of lines and masses employed, all elements must appear to belong to each other (fig. 1, *J*).

This discussion would not be complete unless tools and rules were utilized to produce an ornament. For example, a structural form is presented that might very well represent the side of a leather handbag (fig. 2). Here is demonstrated an occasion where it is desirable to divide the over-all space into smaller areas. Interest in corner and border arrangement is achieved by the breaking up of the main area. It will be observed that these smaller areas are, nonetheless, pleasing and bear a relationship to each other and to the contour of the structural mass. In contrast to the left half of this design, which demonstrates only division of space, the right half continues to develop the ornament to completion.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A Arch. Neurology and Psychiatry, Chicago

70:413-550 (Oct.) 1953

*Quantitative Test of Theory and Diagnostic Indicators of Childhood Schizophrenia. L. Bender and W. H. Helme.—p. 413.
Neuropsychiatric Aspects of Infantile Eczema: Special Reference to Role of Cutaneous Pain Receptors. M. J. Rosenthal.—p. 428.
*Use of Electric-Convulsive Therapy in Morphine, Meperidine, and Related Alkaloid Addictions. F. B. Thigpen, C. H. Thigpen and H. M. Cleckley. —p. 452.
Prognosis in Psychiatry: Results of Psychiatric Treatment. K. E. Appel, J. M. Myers and A. E. Scheflen.—p. 459.
Treatment of Epilepsy with Mysoline. L. Greenstein and M. R. Sapirstein.—p. 469.
Differences Among Epileptics and Between Epileptics and Nonepileptics in Terms of Some Memory and Learning Variables. C. P. Deutsch. —p. 474.
Essential Precautions in Treatment of New Phenomena in Multiple Sclerosis. R. M. Brickner.—p. 483.
Bulbar Reticular Formation and Tremor. F. L. Jenkner and A. Ward Jr. —p. 489.
Role of "Body Image Concept" in Pattern of Ipsilateral Clinical Extinction. R. Cohn.—p. 503.
Use of Phenacemide (Phenurone) in Treatment of Narcolepsy and Cataplexy: Preliminary Report. R. B. Aird, N. S. Gordon and H. C. Gregg.—p. 510.
Electroshock and Rat Adrenal Cortex. J. R. Royce and H. E. Rosvold. —p. 516.

Indicators of Childhood Schizophrenia.—Over two decades (1934-1952) about 7,000 children referred to the psychiatric division of Bellevue Hospital were examined, tested, observed, and referred to homes and institutions for more permanent care. Those who worked with these children had a variety of backgrounds, psychoanalytic, neuropsychiatric, behaviorist, Gestalt. Their concern for the care of the child in the immediate situation was perhaps the one factor they held in common. Out of this diversity of views, a theory has become more integrated, and, with the improvement of diagnostic measures and observation techniques, it appeared feasible to formulate the theory in such a way as to permit objective tests of its working hypotheses. This report describes the results obtained in the first step toward verification. As a check on specific hypotheses arising from the theory, the case records of 30 schizophrenic and 30 nonpsychotic disturbed children were analyzed. One hundred thirty-eight items were rated and recorded by a team of two psychiatrists, a social worker, and a psychologist. Sources of information were psychiatric interviews, notes of nurses and ward personnel, physical and psychological examinations, and interviews with parents. Items were classified in the areas of vasovegetative and motor functioning, body image and self-world perceptions and reality testing, anxiety and neurotic symptoms, social responses, responses to authority, sex expression, and intellectual functioning. Specific predictions on the items were made in advance. Statistical confirmation of these was high, full confirmation ranging from 60 to 79% and full or partial confirmation in some areas from 77% to 88%. The confirmation figures yield possibly a minimal estimate of validity of the hypotheses, since categories were necessarily coarse. The next major steps contemplated are: (1) refining and retesting the recordings on a larger population of more recent date in which the original diagnoses have been confirmed by follow-up study and (2) setting up a standard recording system for current cases for a more systematic checking of major propositions in the theory. The following characteristics of childhood schizophrenia were supported by this study: 1. Childhood schizophrenia is characterized by a disturbance in the regulation of maturation processes at both biological and psychological levels. 2. The dominance of tonic-neck-reflex motility is a particularly striking example of the maturational lag and unevenness of development. 3. The schizophrenic child has basic difficulties in boundaries and segregation of physiological and psychological subsystems. 4. The disorder pervades to some extent virtually all major areas of functioning, in contrast to the concentration of symptoms in single areas among neurotic children and those with primary behavior problems. 5. The concept of plasticity characterizes the behavior and organization of the schizophrenic child in virtually all these areas.

Electroshock Therapy in Drug Addiction.—Attempts have been made to alleviate the manifestations of drug withdrawal by administration of corticotropin or cortisone. Recent reports indicate that little or no relief is afforded by these hormones. The Thigpens and Cleckley began to use electric convulsive treatment in 1948, and the method proved highly successful in controlling the emotional and physiological disturbances during withdrawal. Kalinowski and Hoch reported similarly gratifying results and pointed out that years earlier pentylenetetrazol (Metrazol) shock had been found useful. The authors list 35 drug addicts representative of a larger group treated with electric convulsive therapy. The majority of the patients were addicted to morphine, meperidine, and codeine, singly or in combination, and the duration of addiction ranged from a few months to 20 years. The number of electric convulsive treatments varied. In cases of severe addiction, the authors often give three or four treatments during the first 24 hours. On the second day, two or three may be necessary. After this, one treatment daily is likely to suffice over a period of several days. Then a single electroshock treatment on alternate days usually keeps the patient free of distress. Rarely is it necessary to continue therapy beyond the second week of hospitalization. Confusion from the treatment, particularly during the early days, seems to be desirable, since this plays a part in combating the psychic or emotional component of the withdrawal reaction. The authors reject as unfounded the charge made by some that electroshock therapy is destructive and brutal and point out that the physiological stresses of withdrawal are far more likely than electric convulsive therapy to precipitate coronary thrombosis or to diminish resistance to infection. The possibility of suicide during the despair and misery of withdrawal constitutes a more serious risk to life than the electroconvulsive therapy. Skeletal injury from electric convulsive therapy can be avoided by the use of succinylcholine, which has proved to be a safe, reliable, and effective agent for producing muscular relaxation.

A.M.A Arch. Pathology, Chicago

56:231-332 (Sept.) 1953

Protective Influence of Pregnancy on Experimental Collagen Disease Lesions. R. L. Holman and C. K. Jones.—p. 231.
Aging Processes of Aorta and Pulmonary Artery in Negro and White Races: Comparative Study of Various Segments. S. H. Gray, F. P. Handler, J. O. Blache and others.—p. 238.
Subacute Cerebral Fat Embolism Complicated by Juxtaembolic Thrombosis of Fibrin. J. Cammermeyer.—p. 254.
Effect of Aureomycin on Experimental Arteriosclerosis and Serum Cholesterol Levels. D. Nelson, A. C. Ivy, R. Altschul and R. Willheim.—p. 262.
Experimental Endocarditis in Normal Animals and in Animals Treated with Cortisone. B. J. Clawson.—p. 268.
Observations on Thyroid Colloid. R. R. Fisher.—p. 275.
Hypertension in Bilaterally Nephrectomized Dogs in Absence of Exogenous Sodium Excess: Maintenance of Fluid Balance During Peritoneal Irrigation. E. E. Muirhead, F. Jones and P. Graham.—p. 286.
Hematoxylin Bodies Associated with Allergic Angiitis in Absence of Lupus Erythematosus. B. Worken and R. D. Pearson.—p. 293.
Sarcoma of Endometrial Stroma. W. B. Ober and R. S. Jason.—p. 301.

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Titles marked with an asterisk (*) are abstracted.

American J. Digestive Diseases, Fort Wayne, Ind.

20:251-292 (Sept.) 1953

Constancy of Acid Values in Series of 227 Peptic Ulcer Cases Studied by Repeated Gastric Analyses. S. Morrison and M. Feldman.—p. 251.
Gastric Ulcer: Its Diagnosis and Differentiation by Gastroscopic and Roentgenologic Examination. L. L. Hardt, F. Steigmann and A. Weiss.—p. 253.
Concept of Periodicity in Natural History of Peptic Ulcer and Its Consequences. R. Jahiel.—p. 257.
Obesity: Overnutrition or Disease of Metabolism. A. W. Pennington.—p. 268.
Alpha Cells of Pancreatic Islets and Pathogenesis of Diabetes Mellitus. M. Fabrykant.—p. 275.
Effect of Gastric Secretory Depressants (Banthine, Bellafoline and Amidopyrine) on Innervated Gastric Pouch in Dogs. L. J. Notkin, R. A. Forse and D. R. Webster.—p. 277.
Primary Adenocarcinoma of Appendix. H. J. Epstein, T. H. Mendell and A. S. Conston.—p. 284.

American Journal of Medical Sciences, Philadelphia

226:357-476 (Oct.) 1953

Penicillin Reactions: Their Nature, Growing Importance, Recognition, Management and Prevention. R. A. Kern and N. A. Wimberley Jr.—p. 357.
Correlations in Clinical and Epidemiological Investigation. T. Francis Jr.—p. 376.
Observations on Natural History of Gastric Cancer. L. E. Meiselas.—p. 383.
•Pulmonary Manifestations of Disseminated Lupus Erythematosus. H. L. Israel.—p. 387.
Interstitial Pneumonia and Focal Myocarditis in Poliomyelitis. S. S. Jurow and V. B. Dolgopol.—p. 393.
Management of Shock in Myocardial Infarction with l-Norepinephrine. D. G. Calenda, J. F. Uricchio and L. M. Friedman.—p. 399.
•l-Triiodothyronine Versus l-Thyroxine: Comparison of Their Metabolic Effects in Human Myxedema. R. W. Rawson, J. E. Rall, O. H. Pearson and others.—p. 405.
Incidence and Significance of Sickle Cell Disease in Deaths Subject to Medicolegal Investigation. G. W. Thoma.—p. 412.
Comparison of Effects of Terramycin Hydrochloride and Amphoteric Terramycin on Fecal Flora of Humans. S. A. Broitman, J. R. Cohen and W. Litsky.—p. 419.
Treponemal Immobilization Test. H. Beerman.—p. 425.
Present Status of Surgical Treatment of Ménière's Disease. A. H. Neffson.—p. 442.

Pulmonary Manifestations of Disseminated Lupus Erythematosus.—Roentgenologic or pathological evidence of pulmonary or pleural disease was noted in 20 of 22 patients with disseminated lupus erythematosus. Nine patients died and necropsies were performed. Fifteen patients exhibited on one or more admissions clinical and roentgenologic evidence of pneumonia; in two other patients, previously unsuspected pneumonia was observed on necropsy. Roentgen studies disclosed diffuse perivascular or vascular changes considered characteristic of the collagen disease in only one patient. Two patients had pleurisy with large effusion. Roentgenologic examination disclosed lobar consolidation in some patients with frank symptoms and signs of pneumonia. More often, the respiratory symptoms were overshadowed by the systemic toxemia. Physical signs were minor; in such cases the roentgenologic appearance was usually that of patchy pneumonia. Sputum cultures yielded mixed growths of the common respiratory tract organisms, including pneumococci and streptococci. It appears that pulmonary involvement is extraordinarily frequent in disseminated lupus erythematosus and, therefore, cannot be considered coincidental. Specific pulmonary lesions, comprising either disseminated perivascular changes or chronic interstitial pneumonia, and masssive pleural effusion are relatively infrequent. The commonest manifestation is a nonspecific pneumonia that occurs as a terminal event, but is also frequently a recurrent or migrating process. Disseminated lupus may occasionally be present with predominantly respiratory manifestations. A search for the lupus erythematosus phenomenon should be made in patients with recurrent pneumonia, infiltration, or pleurisy of uncertain cause.

Metabolic Effects of *l*-Triiodothyronine and *l*-Thyroxin in Myxedema.—The total metabolic effects of *l*-triiodothyronine and of *l*-thyroxin were compared with those of *l*-diiodothyronine in a 41-year-old woman with classic myxedema. All urines and stools of the patient were saved for analysis of sodium, potassium, calcium, phosphorus, and nitrogen. The urine was assayed daily for creatine and creatinine. The basal metabolic rate of the patient was determined daily. *l*-Diiodothyronine in the dose of 1 mg. had no significant effect on the basal metabolic rate or on the excretion of nitrogen, phosphorus, and creatine. *l*-Triiodothyronine exerted a prompt but short-lived increase in the basal metabolic rate and in the excretion of nitrogen, phosphorus, and creatine. *l*-Thyroxin exerted a slow and prolonged effect on the same indices. If one disregards time of action, there were no qualitative differences between these two agents. Quantitatively, on an equimolar basis, the only difference is in the speed of action. The difference in the speed of action of *l*-triiodothyronine and *l*-thyroxin can be correlated with the rate of disappearance of each of these hormonal preparations from the circulation.

American Journal of Obstetrics & Gynecology, St. Louis

66:697-928 (Oct.) 1953. **Partial Index**

•Cortisone in Treatment of Hirsute Woman. R. B. Greenblatt.—p. 700.
Experience of Savannah Tumor Clinic in Carcinoma of Stump of Cervix. A. J. Kelley and D. L. Brawner.—p. 711.
Mixed Mesodermal Tumors of Uterus. L. A. Wilson Jr., L. Graham Jr., W. N. Thornton Jr. and J. M. Nokes.—p. 718.
Problem of Uterine Fibroid. N. F. Miller, P. P. Ludovici and E. Dontas.—p. 734.
Trend in Cesarean Section in Recent Years. O. H. Jones.—p. 747.
Puerperal Inversion of Uterus. J. E. Bell Jr., G. F. Wilson and L. A. Wilson.—p. 767.
Symphysiotomy Versus Difficult Forceps. J. Ortiz-Perez.—p. 781.
Secondary Dysmenorrhea. F. H. Falls.—p. 816.
•Treatment of Female Genital Tuberculosis with Streptomycin and *p*-Aminosalicylic Acid. H. Sered, F. H. Falls and B. P. Zummo.—p. 823.
Veratrum Treatment of Toxemia of Pregnancy: Controlled Study. F. A. Finnerty and G. J. Fuchs Jr.—p. 830.
Treatment of Stress Incontinence in Female. J. C. Ullery.—p. 853.
Pregnancy and Hodgkin's Disease: Report of Eight Cases. H. L. Riva, P. S. Andreson and J. W. O'Grady.—p. 866.
Cytological Detection of Uterine Cancer in Private Obstetrical and Gynecologic Practice: Based on Analysis of 104 Consecutive Positive and Suspicious Smears from 8,148 Patients. T. A. Slate, P. L. Martin and J. W. Merritt.—p. 878.
Acute Sodium Deficiency in Postpartum Pre-Eclamptic Patient: Report of Case. D. L. Hutchinson and A. A. Plentl.—p. 891.

Cortisone in Treatment of Hirsute Woman.—Twenty-seven women, 15 of whom also had amenorrhea, 6 irregular menses, 4 regular menses, and 2 previous hysterectomies, were treated with 50 mg. of cortisone given orally every day for from 2 to 18 months. In two women of the first group treatment was discontinued within one to two months because of untoward effects such as depression and melancholia. No change in menstrual function occurred in two patients of the first group, in two of the second, and in all four of the third. The number of ovulations increased in eight of the first group and in four of the second. The number of anovulatory menses increased in three of the first group. A very mild improvement in the hirsutism occurred in four of the first group, one of the second, one of the third, and both of the fourth. In comparing these cases with his previous experiences in the treatment of hirsute amenorrheic women by ovarian resection, the author finds that the patients who experienced little benefit after surgery were significantly aided by further cortisone therapy, while some of the patients who failed to respond to cortisone were benefited by ovarian resection. He postulates a threefold distribution of types of disorders: primarily ovarian, primarily adrenal, and due to an imbalance in the pituitary-adrenal-ovarian axis. The finding of hirsutism, menstrual disorders and mild to moderate elevation of urinary 17-ketosteroids may be common to most cases in these groups, but it is difficult to classify them categorically as belonging to one or another group. The author thinks that excess androgen production in these cases may come from either the excessively luteinized (hyperthecosis) ovaries or from the adrenal cortex or from both sources. If this concept is acceptable, it explains why cortisone helps one group, ovarian resection another, and combined methods a third. The physiological role of cortisone in the management of the hirsute woman may have its effect not merely on the depression of 17-ketosteroid excretion through its inhibition of corticotropin (ACTH) production, but on the balance of growth hormone and adrenal steroids so as to permit a more orderly release of pituitary gonadotropins.

Treatment of Female Genital Tuberculosis with Streptomycin and Para-Aminosalicylic Acid.—Clinical evidence indicates that dihydrostreptomycin when used with *p*-aminosalicylic acid (PAS) is superior to treatment with either of these drugs alone. Combined therapy is superior because the development of resistant bacterial strains is inhibited or significantly delayed; both drugs possess bacteriostatic and possible bacteriocidal effects, and are able to be tolerated over longer periods of time. Para-aminosalicylic acid may be used for its suppressive effects long after the tubercle bacilli have become resistant to streptomycin. It also lessens the possibilities of relapses and recurrences. The patient's own powers of recovery are increased by combined therapy, and, if surgery eventually becomes necessary, the patient is better prepared for it. In a series of 18 consecutive female patients with genital tuberculosis, combined therapy was used to determine whether or not surgery can be eliminated in the treatment of this disease. The average dose of streptomycin was 1 gm. daily given in a single intramuscular injection. The dosage of *p*-aminosalicylic acid was 10 gm. daily. The duration of combined drug therapy was as a rule three and a half to four months. It was found that the need for surgery is sometimes eliminated in some forms of the fibroplastic types of genital tuberculosis with or without ascites, but that the advanced forms of hyperplastic genital tuberculosis and/or caseous lesions usually necessitate extirpational procedures. The clinicopathological peculiarities of tuberculosis are such that the diagnosis may easily be missed; 5 of these 18 patients were subjected to initial surgery with a diagnosis other than genital tuberculosis. In the other 13, diagnoses were correct, and they were managed accordingly. Abdominal distention with or without ascites, appearing within a few months after abortion or delivery, should strongly suggest the possibility of the disease. The recent introduction of the isonicotinic acid hydrazides does not minimize the value of combined *p*-aminosalicylic acid and streptomycin therapy, since there is evidence that the tubercle bacilli often show increasing resistance to the hydrazides.

Am. J. Roentgenol. & Rad. Therapy, Springfield, Ill.

70:543-704 (Oct.) 1953

*Significance of Solitary Mass in Lung. C. A. Good, R. T. Hood and J. R. McDonald.—p. 543.
Insulo-Opercular Arteries of Brain, with Special Reference to Angiography of Striothalamic Tumors. B. Schlesinger.—p. 555.
Roentgen Demonstration of Semicircular Canals in Paget's Disease. K. Kettunen.—p. 564.
Roentgenologic Aspects of Lethal Granulomatous Ulceration of Midline Facial Tissues. R. M. Geist, Jr. and W. H. Mullen, Jr.—p. 566.
Post-Traumatic Diaphragmatic Herniation of Segment of Liver Simulating Anomalous Lobe of Liver. M. Shoshkes and F. J. Lovelock.—p. 572.
Traumatic Mediastinal Hematoma. Z. F. Endress.—p. 576.
Simulated Color Roentgenography. A. H. Dowdy and L. J. Bonann.—p. 581.
Preliminary Evaluation of New Cholecystographic Medium, Teridax. C. R. Weinberg.—p. 585.
Cancer of Larynx Treated by 500 Kilovolt Roentgen Rays. J. S. Binkley.—p. 591.
Physiopathologic Study of Effect of Radioactive Iodine on Ovary. F. W. Tillotson, R. G. Rose and S. Warren.—p. 599.
Multiple Scintillation Counter in Vivo Scanner. H. O. Anger.—p. 605.
Distribution and Excretion of C^{14} Methyl Labeled Glycine. G. L. Nardi.—p. 613.

Significance of Solitary Mass in Lung.—The preoperative roentgenograms of 156 patients who underwent surgical removal of a solitary circumscribed mass in the lung provided the basis for this study. Postoperative analysis of material from the lesion showed 55 to be malignant. A review of the diagnostic evidence revealed that symptoms described by the patient, laboratory tests, skin tests, cytological examination of sputum and bronchial washings, and bronchoscopy did not provide conclusive evidence of either malignant or benign character of the masses. Only the roentgenologist can discover the one positive indication of benignancy—calcification of the mass. Since this is the only definite contraindication to surgery, apart from the general condition of the patient, relative certainty that the lesion is a metastatic extension of a disease known to be present, or suspicion of a benign lesion based on the youth of the patient, the role of the roentgenologist becomes extremely important in the treatment of a solitary mass in the lung.

Am. Practitioner & Digest of Treatment, Philadelphia

4:679-744 (Oct.) 1953

Chronic Renal Failure. A. J. Merrill.—p. 679.
Roentgen Ray Treatment of Leukemia: Therapeutic Paradox. I. Sussman.—p. 686.
Diagnostic Approach to Patient with Anemia. S. O. Schwartz.—p. 690.
Physician and Alcoholism. M. A. Block.—p. 694.
Headache Clinic V: Tension Headache. L. S. Blumenthal, M. Fuchs and A. B. Bennett.—p. 701.

American Surgeon, Atlanta, Ga.

19:915-1014 (Oct.) 1953

Experimental Vascular Grafts: II. Some Undesirable Gross and Microscopic Changes Observed in Arterial Homografts After Implantation into Thoracic Aorta of Growing Pigs: Preliminary Report. E. A. Kanar, L. M. Nyhus, E. J. Schmitz and others.—p. 915.
Surgery as Palliation in Terminal Malignancy Patient. J. T. Payne.—p. 924.
Treatment of Venous Insufficiency of Lower Extremities with Note on Use of Ascending Phlebography. E. D. Grady and E. M. Colvin.—p. 936.
*Bile Peritonitis—Sequelae and Treatment. D. L. Maguire Jr.—p. 946.
Wound Complications Following Surgery. H. T. Whitaker and J. W. Lamb.—p. 953.
Surgical Treatment of Patent Ductus Arteriosus. W. K. Swann and T. L. Lomasney.—p. 964.
Pulmonary Complications Following Upper Abdominal Surgery. F. T. Kurzweg.—p. 967.
Surgical Therapy for Pulmonary Coccidioidomycosis. P. H. Guilfoil.—p. 975.
Surgical Treatment of Degenerative Arthritis of the Hip. F. C. Reynolds.—p. 981.
Emotional Aspects of Surgical Practice. C. K. Hofling.—p. 989.
Carcinoma of Cecum Associated with Acute Appendicitis: Case Report. E. K. Robinson and R. W. Ernst.—p. 1000.
Review of Diagnosis and Treatment of Toxic Goiter. L. A. Bible.—p. 1005.

Bile Peritonitis.—Maguire believes that many more cases of bile peritonitis have occurred than have been reported. The commonest causative factor is rupture of the common bile duct. Less frequently, bile peritonitis may follow leakage from accessory hepatic ducts after cholecystectomy or perforation of the gallbladder or as a result of rupture of the liver or of extra hepatic biliary system either by intra-abdominal injury, such as stab or gun shot wounds, or extra-abdominal injury from a blow or a fall. Usually, the biliary soiling of the peritoneal cavity is sudden. The patient's peritoneal surfaces are flooded with a chemical irritant within a short time. Added to this is the fact that probably in the majority of cases the bile is infected, so that the surgeon is confronted with a suddenly and desperately ill patient who is convalescing from a cholecystectomy and/or choledochostomy and who has a superimposed septic generalized peritonitis. This explains the 60% mortality rate cited on this complication. Rupture of the common bile duct with resultant bile peritonitis may occur at any time after cholecystectomy or choledochostomy. It has been reported as early as 12 days and as late as three and a half years after such operations. Since the outcome is almost certainly fatal without operation, the abdomen should be opened at the earliest moment the diagnosis appears probable. The bile is evacuated; drains are inserted, and, if feasible, the common duct is intubated. The patient is supported with the routine peritonitis regimen. It is wise not to use morphine, since this drug tends to increase sphincter spasm. The author presents a case history of bile peritonitis to illustrate some of the complications that may result. The condition should be suspected in anyone who presents signs of generalized peritoneal irritation with varying degrees of collapse following cholecystectomy and/or choledochostomy. If the patient survives the acute episode, the condition may continue into the subacute or chronic phase, characterized by localized bile collections and/or partial or complete intestinal obstruction due to adhesions. Biliary fistulas following drainage of localized pockets frequently will heal spontaneously. If not, excision of the tract, with the diseased portion of the common duct, may be necessary. Obstruction, usually seen in the duodenum or upper jejunum, may require mobilization or anastomosis around the involved segment of bowel.

Arizona Medicine, Phoenix

10:311-352 (Sept.) 1953

Development of Medical Use of Radioisotopes. P. C. Aebersold.—p. 311.
Breast Lesions as Seen in Physician's Office. H. H. Davis.—p. 316.

10:353-382 (Oct.) 1953

Indications for Irradiation of Breast Lesions. U. V. Portmann.—p. 353.
Role of the Non-Specialist in Care of Allergic Disease. S. M. Feinberg. —p. 354.
Why Report Communicable Diseases? C. G. Salsbury and J. B. Swayne. —p. 358.

Arkansas Medical Society Journal, Fort Smith

50:77-94 (Oct.) 1953

The Tuberculosis Problem in Arkansas. J. D. Riley.—p. 78.
Post-Operative Care to Prevent Recurrence of Kidney Stones. G. Carroll. —p. 80.
Recent Trends in Diagnosis of Cancer. J. H. Growdon.—p. 83.
"Fluid Balance—Everyone's Specialty." A. Kahn Jr.—p. 85.

Bulletin of Johns Hopkins Hospital, Baltimore

93:147-204 (Sept.) 1953

*Local Use of Hydrocortisone Acetate: Preliminary Report. R. C. V. Robinson.—p. 147.
Diagnosis and Surgical Removal of Intracavitary Myxoma of Right Atrium. H. T. Bahnson and E. V. Newman.—p. 150.
Comparison of Metabolic Activities of 3,5,3'-*L*-Triiodothyronine and *L*-Thyroxine in Myxedema. S. P. Asper Jr., H. A. Selenkow and C. A. Plamondon.—p. 164.

Local Use of Hydrocortisone Acetate.—According to Robinson, critical evaluation of the local use of hydrocortisone acetate (Compound F) has been hampered by the meager supply of ointment available for research purposes. The present communication deals with the results obtained in 42 patients. The 42 patients included 28 with atopic dermatitis, 8 with pruritus vulvae, 3 with pruritus ani, and 3 with discoid lupus erythematosus. The topical applications were made with an ointment containing 2.5% hydrocortisone acetate. Twenty of 28 patients with atopic dermatitis showed definite improvement within 24 hours. All patients had exacerbations when applications were discontinued. Five of eight patients with pruritus vulvae and one of three patients with pruritus ani improved as long as the ointment was applied but experienced flare-ups on withdrawal. The results in discoid lupus erythematosus were such that further study is indicated, since other investigators do not agree as to its value.

Connecticut State Medical Journal, Hartford

17:809-892 (Oct.) 1953

What is Education? R. Livingstone.—p. 811.
Nutrition and Obesity Problem. R. J. Anderson.—p. 815.
Lymphosarcoma of Uterus: Report of Two Cases. L. L. Walton.—p. 819.
Statistical Study of Premature Infant. K. J. Edgar and M. Bogin. —p. 822.
Partial Agenesis of Corpus Callosum with Porencephaly. J. Greenblatt and C. Anderson.—p. 824.
Re-Education—Method of Psychiatric Rehabilitation. W. B. Terhune. —p. 828.
Beneficial Effect of Postpartum Plasma in Case of Myasthenia Gravis. L. W. Granierer.—p. 834.

Hawaii Medical Journal, Honolulu

13:1-88 (Sept.-Oct.) 1953. Partial Index

Human Infestation with Fasciola Gigantica. G. N. Stemmermann.—p. 19.
*Harada's Disease—Vogt-Koyanagi Syndrome: Diffuse Melanitis. H. E. Crawford.—p. 26.

Harada's Disease (Diffuse Melanitis).—Crawford illustrates with two case reports a rare entity with many bizarre aspects that seriously affects the eyes. The disease is characterized primarily by bilateral uveitis associated with retinal detachment. The distinction between Harada's disease and Vogt-Koyanagi syndrome depends on the location of the inflammation. In Harada's disease, which has a somewhat better prognosis, the inflammation is limited to the posterior segment; in the Vogt-Koyanagi syndrome, it extends to the ciliary body and iris and usually results in complete loss of vision. Both of these entities are associated with one or all of the following conditions that appear at varying periods after the onset of the disease: headache, meningismus, deafness, dizziness, alopecia, vitiligo, and poliosis. The cause is not known, but it occurs in moderately pigmented persons (Japanese and Italians). There are no reports of it having occurred in blond persons. The presenting symptom that brings the patient to the physician is loss of vision. This is rapid, progressive, and usually complete in the course of a week or two. It is frequently associated with headache. Dizziness and deafness appear about the second or third week. Alopecia, poliosis, and vitiligo are later developments. The prognosis is always grave, and there is as yet no treatment of demonstrated value. Foreign protein, tuberculin, diphtheria antitoxin, and uveal pigment injections, as well as a host of drugs, have been used to no avail. The second of the cases presented is noteworthy, because tissue removed at iridectomy could be examined, and treatment with cortisone proved of value during the early stages, but after a recrudescence of the disease it did not appear to have any particular effect. Its use should probably be continued for a long period to achieve a cure. It appears that the disease involves the pigment or melanin bearing tissues. There is melanin in the uveal tract, and the disease is most intense in the eye. There is melanin in the skin and in the hair. This accounts for the vitiligo and poliosis and presumably the disturbance of the pigment in the germinal layer of the hair follicle accounts for the loss of hair. A disturbance in the pigment granules in the cells of Hansen in the organ of Corti could explain the deafness, and involvement of the pigment granules in the hair cells of the utricle, saccule, and ampullae of the semicircular canals can account for the dizziness that sometimes occurs. Melanoblasts are found in the pia mater of the ventral surface of the medulla oblongata. The presence of meningismus with an increased cell count in the spinal fluid could be the result of involvement of this tissue. The essential factor of Harada's disease and of the Vogt-Koyanagi syndrome seems to be an inflammation of the melanin bearing tissues, either on an allergic or an infectious basis. The author feels that the term "diffuse melanitis" is preferable to the eponymic designations.

Iowa State Medical Society Journal, Des Moines

43:403-442 (Oct.) 1953

*Comparative Radiotherapeutic Results in Carcinoma of Cervix Uteri as Modified by Prior Surgery and Radiation. H. B. Hunt.—p. 403.
Pudendal Block Anesthesia in Obstetrics. J. R. Wilson and K. L. Cooper. —p. 409.
Pitfalls in Electrocardiography. D. J. Wagner.—p. 412.
Problems Posed by Newborn Infant of Diabetic Mother. R. D. Gauchat. —p. 416.

Comparative Radiotherapeutic Results in Carcinoma of Cervix Uteri.—Carcinoma of the cervix uteri is the commonest form of gynecologic cancer and the one that best lends itself to treatment. Recent improvements in treatment have been due to earlier diagnosis, better recognition of in situ lesions that are often not cancerous or, if they are, that do not usually lead to clinical carcinoma, surgery involving radical pelvic lymph node dissection as a preventive measure as well as total hysterectomy, more effective use of roentgen and radium therapy, and new developments in radiation therapy, such as ultrapenetrating megavolt roentgen and radiocobalt therapy, rotational irradiation, and experimental use of radioactive gold. Care must be exercised in the use of these methods, as shown by the present study. The absolute five year survival rate, with conventional radiotherapy in 318 cases of carcinoma of the cervix uteri unmodified by prior surgery or radiation treated at a state and a private hospital in Nebraska between 1937 and 1947, was 48.1% (state cases 43.1%; private cases 57.9%). Twenty-eight cases modified by prior surgery showed an over-all five year survival of 35.7%: stage 3 and 4 cases no survival, stage 2 cases 14% survival, and stage 1 cases 69.2% survival. These figures demonstrate that surgery prior to irradiation becomes increasingly deleterious with the advance of the disease. Twenty cases of carcinoma of the cervix modified by prior radiation therapy showed only one (5%) five year survival and with increased incidence of sequellae following reirradiation. Since reirradiation is ineffective and hazardous, the initial application must be optimal in concept, distribution, and dosage. Any carcinoma of the cervix persistent or recurrent after surgery and controllable by radiotherapy could have been more assuredly and satisfactorily controlled by initial radiotherapy alone. Surgery should serve these purposes only: (1) identify undiagnosed cervical lesions—biopsy, (2) remove verified in situ carcinoma—total hysterectomy with removal of the vaginal cuff, (3) remove carcinoma of the cervix invading bladder or rectum but confined to the pelvis—partial or complete pelvic exenteration, (4) remove residual or recurrent carcinoma after near tolerance radiation—radical hysterectomy, and (5) palliate stage 4 cases with nerve plexus pain and edema—pelvic sympathectomy or cordotomy. The preferred primary treatment for clinical carcinoma of the cervix uteri is irradiation combining roentgen rays and radium.

Journal of Pediatrics, St. Louis

43:371-498 (Oct.) 1953

*Cat-Scratch Fever. C. W. Daeschner, G. W. Salmon and F. M. Heys.—p. 371.
Serum Corticoids in Children Under Stress. R. Klein, C. Papadatos and J. Fortunato.—p. 385.
Unusual Form of Central Nervous System Disease in Newborn Infant. B. H. Berrey and F. G. Dannenbring.—p. 388.
Dental Caries Among Elementary School Children in Oregon. D. M. Hadjimarkos.—p. 393.
Leukemia in American Samoa. A. M. Earle.—p. 398.
Gamma Globulin Dosage and Measles Control: Report of 188 Cases. L. Bivings.—p. 401.
Encephalitis in Children with Measles Who Were Given Attenuating Doses of Gamma Globulin. L. Odessky, A. V. Bedo, H. Weisler and B. Newman.—p. 404.
Extravesical Ureteral Ectopia. W. L. Huffman, L. Persky and J. J. Joelson.—p. 407.
Use of Mysoline in Treatment of Epilepsy. P. J. Doyle and S. Livingston.—p. 413.
Bronchial Adenoma. S. M. Berger, A. G. Boreadis and V. Kremens.—p. 417.
Allergenicity of Modified and Processed Foodstuffs: IV. Orange: Allergenicity of Orange Studied in Man. B. Ratner, S. Untracht, H. J. Malone and M. Retsina.—p. 421.
*Further Examples of Endocardial Cushion Defect in Production of Cardiac Anomaly Complex: Presentation of Three Cases from Autopsy Reports. A. W. McCullough.—p. 429.
Rehabilitation of Child with Numerous Congenital Defects. A. Kanof and S. Bernstein.—p. 434.
Bilateral Epididymal Tuberculosis in an Infant. C. A. Wattenberg, M. Abrams, H. K. Lewis and J. Lewis.—p. 443.
Neonatal Symmetrical Pedal Gangrene with Complete Recession. H. E. Stadler.—p. 447.
Surgically Acquired Hypothyroidism in Child with Coarctation of Aorta. E. E. Johnson and O. C. Bruton.—p. 449.
Roentgenographic Diagnosis of Coarctation of Aorta in Two-Day-Old Infant. D. N. Marks, R. S. Shapiro and L. G. Joseph.—p. 453.
Hypoplastic and Aplastic Anemias of Infancy and Childhood: With Consideration of Syndrome of Nonhemolytic Anemia of Newborn. C. H. Smith.—p. 457.

Cat Scratch Fever.—Twelve cases of cat scratch fever in children are reported from the south Texas area. These cases were seen within the past 18 months, which emphasizes the probable widespread incidence and frequent observation of this disease in the everyday practice of medicine. The patients exhibited the characteristic features of the disease, malaise, fever, and unexplained local adenopathy in which the size of the enlarged lymph nodes may be quite impressive. The incubation period varied from 10 to 30 days. The patients were in close association with cats, although specific instances of scratch could be elicited in only some of the patients. At the time medical advice was sought, significant enlargement of one or more lymph nodes was the chief presenting symptom. Both axillary and epitrochlear lymph nodes on one side were involved in two patients; epitrochlear or axillary involvement alone occurred in six. In four involvement was limited to the inguinal region. A typical primary lesion was identified definitely in only seven patients, and occasionally an exacerbation of redness and swelling was observed at the site where the primary lesion had been in the process of healing. A clearly positive skin reaction to intradermally injected Frei antigen prepared from the bubo of the first patient was observed in all patients within 1 to 14 months after the onset of lymphadenitis. By way of comparison, a group of control persons was tested with this antigen; this group consisted of normal volunteers, of patients with no evidence of lymph node disease, and patients with suppurative or nonsuppurative adenopathy thought to be attributable to other causes than cat scratch fever. The results of these skin tests were consistently negative. No untoward effects of any kind occurred as a result of the injection of the antigenic skin test materials. Skin test antigens then were prepared from material obtained by needle aspiration of involved lymph nodes in two additional patients. All three antigen samples gave similar results: positive skin reactions in the patients with cat scratch fever and negative reactions in controls, irrespective of the sample of antigen employed. No specific therapeutic measures were of definite benefit. Chlortetracycline (aureomycin) seemed to shorten the febrile course in some cases and to alleviate the systemic symptoms to some degree. While the etiology of this disease entity has not been clarified completely, there is considerable evidence in support of the view that the infectious agent belongs to the psittacosis-lymphogranuloma group of viruses.

Endocardial Cushion Defect.—A complex anomaly of the heart involving (1) patency of the interventricular septum in the region of the root of the great vessels and (2) transposition or other anomaly of the great vessels, external to the heart, was revealed by necropsy in a girl and a boy aged 14 months and 4 years at the time of death and in a male infant stillborn during the eighth month of pregnancy. The three cases described are examples, in varying degree, of failure or retardation of endocardial cushion development during the period from the fourth to the seventh week of gestation, i. e., the period of septation. It is a critical one in cardiogenesis because so many structures first appear and, also, the velocity of the developmental process is at a peak. The absence of endocardial cushion development in the case of the girl left the primitive atrioventricular orifice undivided; this in turn allowed a single column of blood to enter the ventricle and accordingly a single chamber, rather than two chambers with a septum between them, was formed. The absence of endocardial cushions left the bulb without impetus to ridging and septation, and a single aorticopulmonary trunk persisted. The undivided ventricle and undivided aorticopulmonary root served to supply the lungs, as all other portions of the body, with the required blood; hence there was no excess blood particularly sent to the lungs that could not be utilized by that developing system, and that explains the total absence in the girl of ductus arteriosus for which there was no need. The case of the stillborn was interpreted as an example of an early disturbance in endocardial cushion development that subsequently was erased by a more or less normal development. The transposition of the great vessels indicated that the endocardial cushion development was sufficiently delayed to disturb the normal ridging and septation of the bulb. The patency in the far anterior portion of the intraventricular septum likewise indicated that, although the bulbar septum and the interventricular septum formed, the ventral endocardial cushion failed to contribute at the appropriate time that material that would have united these two septums and would have actually completed septation of the ventricle and the bulb. The normal appearance of the valves and related structures showed that this early deficiency in development was later compensated. Enlargement of the heart to the right and a peculiar shallow cone-shaped depression on the left face of the interventricular septum at a point just inferior to the aortic root were observed in the case of the 4-year-old boy. Probing of this depression showed a canal-like continuity that penetrated the interventricular septum and emerged on the right side of the septum between two ridges of the trabeculae carneae. It is assumed that this channel had a valve-like action and that the channel allowed blood to pass from the left to the right side, thus accounting for the clinical history of heart murmur. The need for careful postmortem examination of specimens is emphasized particularly in cases in which a history or suggestion of cardiac or cardiovascular irregularity exists.

FOREIGN

Canadian Medical Association Journal, Montreal

69:349-468 (Oct.) 1953

A Century in Retrospect. H. L. Scammel.—p. 349.
Dangerous "Universal Donor": Case of Haemoglobinuric Nephrosis. D. I. Buchanan, S. Hanson and M. Schwarz.—p. 352.
Atherosclerosis—Inevitable or Controllable? W. Dock.—p. 355.
Digestive Symptoms in Angina Pectoris: Clinical Study. B. Carasso and J. Longtin.—p. 364.
Purpura Fulminans with Afibrinogenaemia. F. C. Heal and G. Kent. —p. 367.
Controlled Hypotension to Reduce Surgical Haemorrhage. K. W. Langston.—p. 371.
Diagnostic Classification and Re-Education in Aphasia. E. Douglass. —p. 376.
Optimal Ages for Elective Surgery in Infants and Children. C. C. Ferguson.—p. 381.
Studies in Lobotomy. D. Karp and A. H. Neufeld.—p. 387.
Post-Sanatorium Institution for Rehabilitation in Tuberculosis. B. McKone. —p. 395.
Observations on Sensitized Sheep Cell Haemagglutination Test for Tuberculosis. A. R. Armstrong and J. H. Lee.—p. 403.
Bronchogenic Carcinoma. N. Berkson.—p. 406.
Behaviour Problems in Children. P. Williamson.—p. 412.
Thoracoscopy as Diagnostic Procedure in Pulmonary Tuberculosis. Z. Gorecki.—p. 415.
Toxicity Studies on Some Newer Long-Acting Local Anaesthetics. M. O. Maykut and E. A. Ryan.—p. 419.
*Tumor Cells in Bone Marrow Smear. H. E. Amy and C. H. Jaimet. —p. 424.

Tumor Cells in Bone Marrow Smear.—Anemia, or abnormal white blood cell counts, or a high sedimentation rate, in conditions defying diagnosis by other means led the authors to do more exhaustive studies of bone marrow aspirates. Some years ago, they had noted tender areas in the sternum of patients with undetermined diagnosis. They observed extraneous cells in these smears and speculated that they might be metastases. Subsequently, they performed marrow punctures oftener and pressed for postmortem, biopsy, or radiographic confirmation of their tentative diagnosis of metastatic tumor. It was not until at least 50 marrow aspirates with these extraneous cells were observed that it was realized that many patients with carcinoma were being diagnosed first in the hematology laboratory by marrow studies, and subsequently the authors even felt able to a degree to correlate the morphology of the cell type found in the aspirate with the primary site of the tumor growth. From June, 1949, to June, 1952, a total of 1,100 marrow punctures were performed, and 335 of these were specifically examined for malignant cells; 265 yielded positive results. The majority were confirmed by surgery, radiography, biopsy, or postmortem examination, and, in 164 of the 265 patients, there had been no clue to the diagnosis prior to the marrow puncture. Cells that the authors regard as malignant proliferate through the marrow and cannot be identified as hemopoietic cells. They may cause a reaction in the hemopoietic cells in the form of a leukoerythroblastic response, or they may stimulate an increase in plasma cells. Furthermore, eosinophils increase only in the plasma, and not in the peripheral blood; this is suggestive of a response within the marow to foreign protein metabolites. Identification of the tumor cells is facilitated by their tendency to form a syncytium or group within the hemopoietic substance. They vary in size and behavior, depending on the organ in which the primary tumor is situated. They have one or two nucleoli, large in proportion to the nucleus, and the nucleus predominates in size as compared with the cytoplasm. The chromatin structure shows a loosely knit, coarse net of chromatin threads set against a colorless ground matrix. The cytoplasm is fragile, often shows a slight to deep basophilic reaction, and, at times, contains vacuoles. Although the hyaloplasm is often colorless, the spongioplasm may show a coarse, unevenly distributed granulation, acidophilic in its reaction and appearing more like a precipitation than a functional organization of the cytoplasm. This latter finding is particularly true in the cells from bronchogenic carcinoma. The authors comment further on the possible relation between cell type and site of primary tumor and then discuss reticulum cell and plasma cell. They feel that physicians generally have not been made aware of the diagnostic importance of bone marrow studies.

Deutsche medizinische Wochenschrift, Stuttgart

78:1355-1388 (Oct. 2) 1953. Partial Index

Surgical Treatment of Aseptic Bone Necroses. P. Pitzen.—p. 1355.
Rare Form of Leptospirosis. K. Marcuse and E. Eggert.—p. 1360.
Artificial Respiration. G. Fruhmann, B. Klun, H. Valentin and others. —p. 1365.
*Is Lipstick Harmful? H. Ruther and H. C. Friederich.—p. 1370.
Excretion of 17-Ketosteroids and of Corticoids in Chronic Liver Diseases During Tolerance Test with Corticotropin. K. P. Eymer and H. Moll. —p. 1376.

Is Lipstick Harmful?—The case reported by Ruther and Friederich describes a woman, aged 32, who three days before used the lipstick of another person, who had purchased it three years previously, but had used it rarely. In the evening of the day the lipstick had been applied, the lips became red and swollen and there was severe pruritus in the perioral region. On the next morning, when application of powder brought no relief, the patient consulted the authors who found that both lips and the adjoining portion of the skin were edematous. Numerous blisters ranging from pinpoint to pinhead size were distributed over the edematous area. Some of the blisters had ruptured and weeping resulted. There were also rhagades. The submandibular lymph nodes were enlarged and sensitive to pressure. With moist applications of distilled water, the symptoms subsided in two days. Epicutaneous tests with the lipstick material resulted in positive reactions. Control tests with the same lipstick material in 20 other persons yielded positive reactions in 2. In view of the widespread use of lipsticks, harmful reactions are extremely rare, and if they do occur they are often the result of hypersensitivity to eosin or more rarely to eosinic acids. The photosensitization ascribed to eosin is, in some of the cases, probably the result of a summation of irritations in the naturally ray-sensitive region of the lips. Today not eosin but eosinic acids are used in the preparation of lipsticks, and, if the presence of castor oil can be ruled out, there is practically never a reaction of hypersensitivity. At any rate, inflammation of the lips after the use of lipstick is not necessarily the result of hypersensitivity to eosin; the constituents of the lipsticks should be investigated whenever there is an undesirable reaction. Rancidity resulting from long storage of the lipstick may also cause reactions of intolerance. Finally, the summation of subthreshold irritation by the coloring matter and the lipstick base may cause a reaction. As to the cancerogenic effect of the dyes contained in the lipstick, the authors have never seen a case in which the development of carcinoma could be traced to the use of lipstick.

Lancet, London

2:685-738 (Oct. 3) 1953

Overnutrition and Undernutrition: I. Causes. R. A. McCance.—p. 685.
*Treatment of Tuberculous Meningitis with Isoniazid. T. Anderson, M. R. Kerr and J. B. Landsmann.—p. 691.
Treatment of Tuberculous Meningitis with Streptomycin and Isoniazid. J. Torres-Gost.—p. 693.
C.S.F.—Isoniazid Levels in Tuberculous Meningitis. A. P. Fletcher. —p. 694.
Anaemia Associated with Haemophilus influenzae Meningitis. J. Schiavone and S. D. Rubbo.—p. 696.
*Lactosuria and Glycosuria in Pregnancy and the Puerperium. F. V. Flynn, C. Harper and P. de Mayo.—p. 698.
Impalement of the Rectum. L. P. Thomas.—p. 704.
Exercise Tests During Treatment of Hypertension with Hexamethonium. V. Rønnov-Jessen.—p. 706.
Respiration Pump for Poliomyelitis. W. R. Russel and E. Schuster. —p. 707.

Treatment of Tuberculous Meningitis with Isoniazid.—Seven patients with tuberculous meningitis were given both streptomycin and isoniazid during the first week of treatment, but afterwards streptomycin was discontinued and the treatment carried out with 10 mg. of isoniazid per kilogram of body weight given orally each day. A second group of seven patients with tuberculous meningitis treated with streptomycin alone was used as a control, with similar patients from each group matched as pairs. The initial fever of the patient treated with isoniazid in each pair disappeared as soon as, but oftener sooner than, that of the patient treated with streptomycin. The levels of the cells, protein, sugar, and chlorides of the cerebrospinal fluid returned to normal more rapidly in the patient of each pair treated with isoniazid, almost without exception. The patients treated with isoniazid were happier and more comfortable because they did not have to undergo the tedious intramuscular and intrathecal injections necessitated by streptomycin therapy; it is believed that these injections are also responsible for the more extensive disturbances in the cerebrospinal fluid experienced by the patients treated with streptomycin alone. The appetite of patients given isoniazid improved, and there was an obvious gain in weight. Follow-up of these patients has not been long enough to judge the results completely, but it would appear that isoniazid alone has been effective in the treatment of tuberculous meningitis and that the method warrants further investigation. The authors do not suggest that isoniazid alone be regarded as adequate therapy for patients with tuberculous meningitis, because of the rapidity with which tubercle bacilli may develop resistance to isoniazid alone.

Lactosuria and Glycosuria in Pregnancy and the Puerperium.—Past reports on glycosuria and lactosuria in pregnancy showed considerable variance. It was generally believed that, although glycosuria frequently occurred during pregnancy, lactosuria was not found during pregnancy but only during the puerperium. The present study is based on urine specimens from 2,372 prenatal patients, 656 postnatal patients, 240 nonpregnant women, and 132 men, analyzed by qualitative Benedict tests and by paper partition chromatography. It was found that lactosuria is common during pregnancy, occurring about twice as often as glycosuria. Lactose, usually in small amounts, was found in 51% of all prenatal patients, being detected at some time in 94% of patients regularly attending the prenatal clinic of the University College Hospital in London. Glucose was found in 24% of prenatal patients, but 33% of the regular patients never excreted detectable quantities. Prenatal lactosuria increases in incidence as pregnancy advances, was found oftener in the afternoon, and more commonly in primigravida women. Prenatal glycosuria was found oftener in the afternoon and more frequently in older patients. The frequent excretion of considerable quantities of lactose during the puerperium is confirmed; and pregnancy glycosuria was found to disappear rapidly after delivery. Lactosuria occurs in men as well as nonpregnant women eating a normal diet. Lactose, usually a trace, was detected in the urine of 9% of these patients; it is probably alimentary in origin. In pregnancy, glycosuria is probably due to a low renal threshold for glucose and lactosuria to escape of lactose formed in the mammary glands.

2:739-788 (Oct. 10) 1953

Overnutrition and Undernutrition: II. Effects. R. A. McCance.—p. 739.
Transfusion by Intra-Arterial Route. A. S. Brown.—p. 745.
*Hyaline Membrane in Neonatal Lung. A. E. Claireaux.—p. 749.
Gastric Resection for Gastroduodenal Hemorrhage Without Obvious Ulcer. G. Ferguson.—p. 753.
*Controlled Hypotension with Arfonad in Neurosurgery with Special Reference to Vascular Lesions. S. Anderson and W. McKissock.—p. 754.
Results of Treatment of Infantile Cerebral Palsy. E. Collis.—p. 757.
Effects of Inhalation of Sulphur Dioxide by Man. M. Amdur, W. W. Melvin Jr. and P. Drinker.—p. 758.
Polycythaemia with Fibroids. A. P. Thompson and F. G. W. Marson.—p. 759.

Hyaline Membrane in the Neonatal Lung.—Out of 810 necropsies on stillbirths and neonatal deaths, 108 cases of hyaline membrane were found. It was then noted that none of the infants in which it occurred had been stillborn; the membrane developed in 108 (29%) of 376 liveborn infants. Hyaline membrane was the only abnormality in 81 cases (75%). Twenty-two of the 108 infants were delivered by cesarean section; 18 of the 104 pregnancies were twin ones; and there was one triplet in the series. It is suggested that the hyaline membrane, which is never present before birth, is formed from squames in the liquor amnii. The liquor is aspirated into the fetal lung and the squames undergo progressive hyalinization and fusion. This phenomenon occurs mainly in premature infants and infants born of mothers with some abnormality in pregnancy that renders the infant less able to cope with aspirated liquor amnii. The atelectasis associated with hyaline membrane in the newborn is partly the result of direct obstruction of the airways by plugs of hyaline material and partly the result of air being trapped in the distal air sacs when the alveolar ducts are sealed by membrane. Suitably treated deposit from human liquor amnii, when injected tracheally into the rat, will produce a hyaline membrane in the animal's lung.

Controlled Hypotension with Arfonad in Neurosurgery.—In fifty-two patients on whom major craniotomies were performed since March, 1953, at St. George's Hospital, London, hypotension was induced by Arfonad (*d*-3,4[1′,3′-dibenzyl-2′-ketoimidazolido]-1, 2-trimethylene thiophanium *d*-camphor sulfonate) during the operations. Four patients died; three of these were very poor subjects for major surgery. There was no reason to believe that induced hypotension influenced these fatalities. All patients to whom Arfonad was administered had a fall in blood pressure; in only one instance was there a failure to lower the blood pressure to the level requested by the surgeon. After the blood pressure had fallen, the hypotensive state was easily maintained; in only two cases was it necessary to supplement the drug with procaine amide hydrochloride. Although Arfonad is short-acting, the blood pressure was seldom restored as soon as the infusion was stopped; there was usually a lapse of from 1 to 20 minutes. This disadvantage, with two exceptions, was overcome by flattening the table. In two cases methamphetamine (Methedrine) was injected to hasten the return to normal blood pressure. Arfonad is superior to the methonium compounds for inducing hypotension, especially in cerebrovascular surgery in which hypotension is essential, because it is short-acting, gives the anesthetist greater control of the blood pressure, but still reduces the hemorrhage and intracranial tension to the satisfaction of the surgeon. It must be emphasized, however, that Arfonad is not an answer to the dangers of hypotension itself and that it should be used only in selected cases in which that risk is necessary to reduce the greater risk of the operation.

Medical Journal of Australia, Sydney

2:321-360 (Aug. 29) 1953

Pattern of Renal Response to Circulatory Stress. E. G. McQueen, M. P. Summerfield and E. Trewin.—p. 323.
Calorimetry: Method of Estimating Peripheral Blood Flow. A. J. Barnett and G. R. Wigley.—p. 326.
Vaginal Delivery Following Caesarean Section. J. Nattrass.—p. 329.
Serum Protein Levels in Normal Nonpregnant and Pregnant Women. B. Liddelow.—p. 332.

2:361-400 (Sept. 5) 1953

Vertigo. R. G. Mackay.—p. 361.
Vertigo. C. B. Hudson.—p. 363.
Isonicotinic Acid Hydrazide in Pulmonary Tuberculosis. R. M. Ford.—p. 366.
Value of Liver Biopsy in Diagnosis of Tuberculosis and Sarcoidosis. E. S. Finckh, S. J. Baker and M. M. P. Ryan.—p. 369.
Source of Tuberculous Infection in Patients of Royal Alexandra Hospital for Children. R. M. Mills.—p. 374.
General Anaesthesia for Dentistry: Hazardous Field of Practice. R. B. Speirs.—p. 376.

Minerva Ginecologica, Turin

*Effects of Chorionic Gonadotropin in Female During Old Age and Problem of Sexual Endocrine Activity of Adrenal Cortex. E. Moracci.—p. 421.
Treatment of Anuria. P. Quaini.—p. 429.
Accidental Injection of Contrast Medium into Vessels During Hysterosalpingography. A. Tetti.—p. 439.
Study of Ureteral Peristalsis with Ureterotonographic Investigation. P. Quaini.—p. 445.

Chorionic Gonadotropin in Aged Women.—The effects of chorionic gonadotropin on the urinary excretion of the estrogens and the 17-ketosteroids were studied in 10 women, 2 to 34 years after menopause. The women, 49 to 78 years of age, were all well. The estrogen and 17-ketosteroid levels were determined before and 24, 48, and 72 hours after the hormone was administered. Estrogens were not found in the urine of some women before the treatment, and in the others the level varied from 10 to 21 gamma per liter of urine. The 17-ketosteroids were found in quantities that were in inverse ratio to the person's age. One intramuscular dose of 2,500 I. U. of chorionic gonadotropin was tolerated well. Estrogens appeared in the urine of the women in whom they had not been found before treatment, and they increased markedly in the others. The increase was more pronounced after 24 hours, and there was a return to the initial values after 72 hours. The increase in the level of 17-ketosteroids was less pronounced and reached its highest value after 72 hours. These changes in the urinary excretion of the estrogens and the 17-ketosteroids are ascribed to the reaction of the adrenal cortex to the stimulus of the chorionic gonadotropin. They seem to indicate that the reticular zone of the adrenal cortex elaborates not only the 17-ketosteroids but also the estrogens. The functional correlations between the adrenal cortex and the anterior lobe of the hypophysis in women of this age group who have, as a rule, ovary deficiency need to be studied. The mechanism of action of the endocrine activity of the adrenal cortex in them may then be explained. The administration of chorionic gonadotropin to the author's patients showed biological conditions that could not be compared with the natural conditions because the hormone used was of chorionic origin and also because large doses of it were used.

Minerva Medica, Turin

44:585-612 (Sept. 12) 1953

*Value of Cytological Examination of Sputum of Persons with Primary Malignant Tumor of Lung. L. Bussi and L. Manzocchi.—p. 585.

Behavior of "In Vitro" Heparin Tolerance Test with Reference to Tests of Plasma Coagulation. G. Crolle, F. Boglione and S. Bianco.—p. 587.

Study of Venous Thromboses. R. Martino.—p. 594.

Cardiorheumatic Center for Diagnosis and Control of Rheumatism in Children: Its Importance. C. Imperato.—p. 602.

Primary Cancer of Lung and Cytological Study of Sputum.—The authors establish a diagnosis of primary malignant tumor of the lung only after they have made repeated studies of the patient's sputum with the May Grünwald-Giemsa staining method. This procedure is a valuable diagnostic means in the hands of experienced persons and is easy to perform. The morphological and staining characteristics of the nuclei and cytoplasm can be seen simultaneously. The diagnosis of primary malignant tumor of the lung is easily established when the nucleus is markedly hyperchromatic and dark maroon, its chromatin is irregularly clumped with one or more nucleoli varying in shape and size and stained in light blue, and the cytoplasm is dark blue. When these atypical characteristics are not present, the diagnosis is established on the basis of (1) increased cell volume (the macrophages are easily excluded), (2) polymorphism and marked cellular and nuclear anisocytosis, (3) enlarged nuclei, and (4) prevailing nuclear hyperchromatism, chromatic irregularities, one of more nucleoli, and basophilic cytoplasm. Sometimes this method makes possible the histological diagnosis of the cancer. The authors report on 100 persons in whom the presence of a primary malignant tumor of the lung was suspected. They used this method and obtained positive results for cancer in 87. Surgical exploration, endoscopic biopsy, or the clinical course confirmed its presence in all of the patients. They ascribe the false negative results to errors in the procedure and also to the fact that only a few smears could be studied for each patient. The diagnosis should be established only after numerous sputum smears of each patient have been studied. Repeated negative results in the same patient, when the smear is made and studied by competent and experienced persons, almost always indicate that a primary malignant tumor of the lung is not present.

Presse Médicale, Paris

61:1247-1266 (Oct. 3) 1953

Saturnism from Water: Caused by Ground Wire of Radio Set. H. Desoille and C. Albahary.—p. 1247.

*Place of Somatotrophine (STH) in Methods of Hibernation Therapy. H. Laborit, R. Favre, J. Dechen and G. Bastit.—p. 1249.

Therapeutic Use of Ester Alkaloids from White Hellebore in Treatment of Arterial Hypertension. J.-A. Salva and F.-L. Tarrida.—p. 1251.

Somatotrophine (STH) in Hibernation Therapy.—Somatotrophine (STH) is the name given to a somatotropic pituitary extract that was first developed in conjunction with a new method of psychotherapy—prolonged sleep therapy that relaxes the autonomic nervous system by means of pharmacodynamic agents. Somatotrophine now appears to be of value in artificial hibernation for surgery as well. In studying animals that hibernate naturally, it was found that the involution of their endocrine systems during hibernation is only partial; protein anabolism is possible, and there is endocrine hyperfunction of the pancreas. Since the injection of STH in man promotes protein anabolism, prevents the using up of sugars, and causes mobilization and catabolization of fats, while requiring the presence of insulin to offset the protein anabolism, it was hypothesized that this substance is the vital one for the prevention of hyperglycemia in hibernating animals and that it could be used to improve existing methods of artificial hibernation that had always brought about hyperglycemia. When STH was used in addition to cold, it enabled the authors to prolong the state of artificial hibernation in man without fear that metabolic disorders would persist after the return to normal temperature.

61:1267-1286 (Oct. 7) 1953

Histaminopexic Power of Blood Serum: Its Absence in Allergic Patients. J.-L. Parrot and C. Laborde.—p. 1267.

*Streptomycin in Intravenous Infusion: Results of 100 Cures and 5,000 Infusions. Y. Hebraud, M. Bertrac and P. Maufoy.—p. 1269.

Actinomycin C and Its Antitumoral Action. A. Ravina.—p. 1270.

Streptomycin in Intravenous Infusion.—Results of the treatment of 100 tuberculous patients with streptomycin in intravenous infusions, accompanied by *p*-aminosalicylic acid and, later, isoniazid have been excellent and have demonstrated the superiority of the intravenous to the intramuscular route. The patients, who were all cured, were treated in the course of the past two years by means of one three hour continuous slow infusion a day of streptomycin dissolved either in *p*-aminosalicylic acid or in a physiological serum, the *p*-aminosalicylic acid being administered orally. The total number of infusions given was 5,000; 4,616 of the first type described were given to 95 patients and 384 of the second type to 5 patients. Isoniazid was added to the last 1,300 infusions of all the patients; cures were effected in from 30 to 148 days. Tolerance of the streptomycin was good; the usual reaction to infusion of *p*-aminosalicylic acid appeared in some patients, but it is noteworthy that there were no such side-effects in the five patients to whom it was given orally. There were no vestibular or cochlear disturbances. No more resistance developed than does when streptomycin is administered intramuscularly. The infusion method has proved effective in different forms of pulmonary tuberculosis and in several cases of extrapulmonary tuberculosis, notably tuberculous meningitis.

61:1287-1304 (Oct. 10) 1953

*Study of Cutaneous Circulation in Permanent Arterial Hypertension. A. Lemaire, J. Loeper and E. Housset.—p. 1287.

Invasion of Lymph Nodes in Carcinoma of Cervix Uteri: Consequences for Therapy. A. Tailhefer.—p. 1289.

Research on Synthetic Sympathicolytic and Oxytocic Substances from Ergotamine Series. E. Savini.—p. 1291.

Cutaneous Circulation in Arterial Hypertension.—Of the numerous suggestions advanced concerning the physiopathological mechanism responsible for permanent arterial hypertension, the one mentioned most frequently ascribes the condition to an increase in peripheral resistance combined with a permanent reduction in the lumens of the arterioles. This idea is supported by the fact that during the disease the cardiac output, venous pressure, and blood volume and viscosity remain normal or nearly so. Plethysmograms, sphygmograms, and measurements of arteriolar pressure were made on the digital pulps of 89 hypertensive patients and 92 normal controls. The authors conclude that in patients with arterial hypertension the cutaneous circulation does not necessarily play a part in the maintenance of the condition; hypertension may be contained within elastic arteries. When the cutaneous circulation is involved, it either increases the peripheral resistance—not at the level of the arteriole, but probably at the level of the metarteriole—or is affected by a true hyperkinesia in the vascular wall that contributes to the rise in maximal pressure. It is felt that the theory that blood vessels play only a passive role in blood circulation should be abandoned and that the notion of actual movement of the vascular wall should be applied to the problem of the physiopathology of the vascular muscle and of its basic sensitivity.

Riforma Medica, Naples

67:1017-1044 (Sept. 12) 1953

Treatment of Sepsis Due to Escherichia Coli. G. Suardi.—p. 1017.

*Isoniazid in Tuberculous Meningoencephalitis with Respect to Route of Administration and Its Concentration in Cerebrospinal Fluid. I. Ragno, P. Preziosi and G. Porcellati.—p. 1022.

Clinical and Experimental Study of Tissue Therapy. L. Pasquali and G. Arpesella.—p. 1027.

Isoniazid and Glutamic Acid in Tuberculous Meningoencephalitis.—The effects of oral, parenteral, intramuscular, and intravenous administration of isoniazid to patients with tuberculous meningoencephalitis and the concentration of the drug in the cerebrospinal fluid were studied. Massive doses of isoniazid (20 to 30 mg. per kilogram of body weight) gave good results when given orally. But, as a rule, large doses of the drug cause pronounced toxic effects of the nervous system. Since these side-effects are ascribed to the liberation of ammonia from the isoniazid molecule and since glutamic acid combines easily with ammonia to form glutamine, the authors studied the effects of simultaneous oral administration of isoniazid and glutamic acid in patients with tuberculous meningitis. Some patients were given the drug in regular doses (4 mg. per kilogram of body weight) with glutamic acid in the ratio of 10 parts to 1 part of isoniazid, and some were given the same dose without glutamic acid. Others were given massive doses of isoniazid (from 8 to 25 mg. per kilogram of body weight) without and with glutamic acid in the same ratio. There were no toxic disturbances in these patients, and the gastric tolerance was good. The spinal fluid concentrations of isoniazid were determined four hours after the administration of the drug. The levels of isoniazid in the spinal fluid of the patients who received massive doses of it with glutamic acid were far greater than those in the fluid of patients who were given the usual therapeutic doses with and without glutamic acid. The concentrations in these patients were bacteriostatic and may have been bactericidal. A concentration of 7.8 mcg. per cubic centimeter of fluid was found in one patient, and this is the highest concentration of isoniazid in spinal fluid so far reported in the literature. Although the various levels depended on physiological and pathological factors, there was always a certain ratio between the isoniazid concentration and the amount of drug administered. The authors conclude that treatment of tuberculous meningoencephalitis with large doses of isoniazid may be carried out on a large scale and with good results if the drug is administered orally with glutamic acid and with or without streptomycin.

Rivista d'Ostet. e Ginec. Pratica, Milan

35:329-392 (July) 1953. **Partial Index**

The Correct Use of Antibiotics. G. Nicora.—p. 329.

Liver Function in Pregnancy: Influence of Trigonelline Amide (N_1 Methylnicotamide Chloride) on Blood Level of Pyruvic Acid, Lactic Acid, and Amino Acids in Pregnant Women with Signs of Liver Insufficiency. G. Bartolomei and M. Rossi.—p. 336.

*Fetal Anasarca Due to Rh-Isoimmunization. G. Orlandini.—p. 348.

Fetal Anasarca.—A 30-year-old woman, eight months pregnant, sought help to interrupt a series of unfortunate pregnancies. Her first child was living and in good health. Her second child who was born apparently healthy died of severe icterus after three days. The third pregnancy resulted in a stillbirth and the fourth in an abortion during the eighth month of gestation. The patient was well; the general and obstetric examination revealed no abnormalities. The fetal heart beat was heard. She, her husband, and her daughter belonged to the same blood group. But at 37 C the patient's serum agglutinated the red blood cells of her husband and daughter. Complete anti-Rh antibodies were not found, but incomplete anti-Rh antibodies were present in the ratio of 1:64. The patient was kept under observation, and the pregnancy was to be interrupted at the end of the eighth month. Suddenly, a few days later, labor began, and a dead fetus, which weighed 2,800 gm., was delivered. The puerperium was normal. The anatomic findings revealed a state of anasarca and an enlarged liver and spleen. The histological study revealed severe cytological alterations that at some points were almost necrotic. These were ascribed to an antigen-antibody reaction in the tissues of the fetus. Some authors have found that in many fetuses the incompatible Rh antigen is found not only in the blood but also in many tissues, and their presence is responsible for the various clinical pictures of the hemolytic disease. Grünwald explained fetal anasarca as the effect of an anaphylactic shock caused in the fetus by the maternal antibodies. Since capillary permeability is a characteristic of shock, unlimited quantities of fluid may pass into the tissues and cavities of the fetus. The quantity and quality of the fetal antigens that enter the maternal blood stream and of the relative antibodies that pass through the placenta as well as the time in which the passage occurs are important factors. Since the placenta seems to become permeable to the maternal antibodies during the last months of gestation, attempts have been made to prevent or attenuate the damages of Rh-isoimmunization by interrupting the pregnancy early and treating the child with exchange transfusion. The author obtained good results in 10 instances.

Riv. di Pat. e Clin. della Tuberc., Bologna

26:193-256 (July-Aug.) 1953. **Partial Index**

*Clinically Primary Mediastinal and Pulmonary Localizations of Besnier-Boeck-Schaumann Disease. E. Fasano.—p. 193.

Intestinal Tuberculosis in Infancy and Adolescence and Influence of Antibiotic Therapy. E. Filla and E. Palumbo.—p. 211.

Therapeutic Effects of Surgical Extrapleural Pneumothorax Complicated by Reduction or Elision of the Extrapleural Cavity. M. Busin and O. De Lorenzi.—p. 223.

Besnier-Boeck-Schaumann Disease.—The cause of the Besnier-Boeck-Schaumann disease, or sarcoidosis, is still obscure. A skin manifestation is not always the first or a constant sign of the disease. It may involve the respiratory apparatus and lymph nodes and often the phalanges of the hands and feet, the nose, pharynx, spleen, liver, and nervous system. Lesions to the hilus and lungs are the commonest, and they are often confused with those of other pulmonary disease, especially tuberculosis. Lesions to the mediastinum and lungs are generally asymptomatic or present mild signs that are not characteristic (loss of weight, asthenia, elevated temperature, cough, dyspnea, and cyanosis). A great discrepancy between the physical and roentgenologic findings is characteristic of the disease. Roentgenography may present one of three pictures: involvement of the mediastinal lymph nodes with symmetric enlargement of the lymph nodes of the hilus; involvement of the lung; and involvement of the mediastinum and lungs. The diagnosis of sarcoidosis is based on clinical, roentgenologic, and laboratory data and histological findings of the bronchial mucosa obtained endoscopically. Differential diagnosis between a clinically primary pulmonary form of sarcoidosis and some forms of pulmonary tuberculosis is difficult. Many cases of sarcoidosis have been described in which the reaction to intradermal injection of tuberculin was positive. Some authors have reported that vaccination with BCG does not give rise to the reactivity to tuberculin in patients with this disease, and that an epithelioid reaction similar to that of sarcoidosis appears at the site of the inoculation. The disease may remain stationary for many years, and the patient may die from respiratory and cardiac insufficiency of the right side. Sarcoidosis is believed to be of infectious origin, but further studies are needed for a definitive statement. At present, on the basis of the anatomicohistological findings the disease is classified among those of the reticuloendothelial group. The author reports on two patients with sarcoidosis. In the first, a 53-year-old man, the disease involved the lymph nodes of the hilus and the diagnosis was established after two superficial lymph nodes were felt on the right side of the neck. The histological findings confirmed the diagnosis. In the second patient, a 35-year-old man, the disease involved the lungs. Diagnosis was established on the basis of the clinical, radiologic, and laboratory data. It was confirmed by biopsy of the bronchial mucosa and the histological findings of a lymph node that was felt under the right clavicle.

Semaine des Hôpitaux de Paris

29:2889-2940 (Oct. 2) 1953

*Results of and Remarks on Experimental Rapid Treatment of Early Syphilis with Penicillin. P. de Graciansky and C. Grupper.—p. 2889.
Effect of Primosecondary Syphilis on Liver as Studied by Functional Tests and Punch Biopsy of Liver. P. de Graciansky and J. P. Hardouin —p. 2904.
Syphilophobia. P. de Graciansky and E. Stern.—p. 2911.

Experimental Rapid Treatment of Early Syphilis with Penicillin.—Three things have revolutionized the treatment of syphilis: advances in serology, such as Nelson and Mayer's test, that permit better diagnosis; penicillin therapy; and discoveries in the bacteriology of the Treponema pallidum that have shown what is the most effective timing in the administration of penicillin. A detailed study was carried out by the authors and their colleagues of 53 patients treated with penicillin in the early stages of syphilis. There were three groups of patients: 10 in the preserologic stage of primary syphilis, 15 in the serologic stage of primary syphilis, and 28 in the early stage of secondary syphilis. Each patient received three intramuscular injections seven days apart; the first was of 3,000,000 units and the others of 1,500,000 or 3,000,000 units each, depending on the patient. The following results were noted: 1. Clinical symptoms definitely disappeared in all patients. 2. Treponema disappeared from the lesions within 24 hours after the first injection. 3. Tests of the serum were not positive after treatment in patients whose serum reactions had been negative before treatment; their cerebrospinal fluid also remained normal. Negative response or decrease in rate of reaction was obtained in patients whose serum gave a positive reaction before treatment. 4. Quantitative amelioration in the serum appears considerably sooner than qualitative amelioration and thus constitutes a better sign to be watched during treatment. 5. Before treatment, results of Nelson's test were positive in only the patients with a high rate of reaction; after treatment, negative responses were obtained in patients who had been treated early in the disease, but results of the Nelson reaction of patients treated late in the disease were not influenced. 6. None of the persons who had sexual relations with the patients treated showed any signs of syphilis nor did the children born of these patients. 7. The side-effects of therapy were insignificant. No precautions were sufficient to prevent the appearance of a Herxheimer reaction in 50% of the patients, but preventive therapy with cortisone (100 mg. of cortisone daily for five days) reduced this to an inconsequential level. The reaction may appear after any of the three injections. 8. Although the amount of penicillin in the blood varied unpredictably in each patient, these differences did not influence the results of therapy in any way. 9. The authors are of the opinion that their therapy was actually more extensive than is necessary for early syphilis; they plan to experiment with the use of one injection only. A report on this is forthcoming.

Settimana Medica, Florence

41:339-366 (Aug. 15) 1953. **Partial Index**

Experimental Studies on Reproductive Processes of Normal and Abnormal Bone Marrow: Proliferative Activity of the Hemocytoblast of Acute Leukosis. G. Astaldi and G. Mauri.—p. 339.
Brill-Symmer's Disease? Clinical and Morphological Considerations on a Case of Follicular Lymphoblastoma. M. Del Dotto and A. Torrini. —p. 345.
*Stellate Ganglion Block in Treatment of Hemiplegia Secondary to Cerebral Thrombosis and Embolism. U. Principe.—p. 352.

Stellate Ganglion Block in Hemiplegia Secondary to Cerebral Thrombosis and Embolism.—Patients with hemiplegia secondary to cerebral thrombosis or cerebral embolism are treated at the University of Florence surgical clinic with block of the stellate ganglion on the side opposite that involved by the paralysis. The anterior approach of Leriche or the posterior paravertebral approach of Mandl is used. The latter is preferred, since there is less danger of puncturing the subclavian artery, the rami of the brachial plexus, or the pleura. As a rule, one 20 cc. injection of a 1% solution of procaine hydrochloride without epinephrine is given every day. But, if the first injection causes a pronounced drop in the blood pressure, the ganglion is blocked every other day. A successful injection is followed by the onset of Horner's syndrome; if this does not develop, another injection is given within 20 minutes. The best results are obtained in young patients in whom the treatment is instituted as soon as possible after the stroke occurs. The author gave more than 300 injections to 18 persons with hemiplegia. This was secondary to cerebral thrombosis in 14 aged patients and to cerebral embolism in 4 patients with heart disease. Each patient was given from 10 to 30 injections; there were no untoward effects. The results evaluated 10 days after the last injection were good in six patients who made a complete recovery, fair in eight who recovered partially, and poor in four patients. Treatment was instituted too late in these patients, and their condition remained unchanged. The author never uses this treatment for patients in whom the stroke is caused by a cerebral hemorrhage. The vasodilatation that follows the interruption of the sympathetic innervation may contribute to increase the hemorrhage and thus aggravate the state of coma and the paralysis.

Thorax, London

8:167-250 (Sept.) 1953

Ulcero-Caseous Tuberculous Bronchitis: Method of "Spread" in Pulmonary Tuberculosis. J. W. Clegg.—p. 167.
Fibroma of Visceral Pleura. C. P. Thomas and C. E. Drew.—p. 180.
Surgical Anatomy of Pulmonary Vessels. J. C. Van der Spuy.—p. 189.
Fatal Bronchial Asthma: Series of 15 Cases with Review of Literature. B. V. Earle.—p. 195.
*Clinical and Pathological Study of Fatal Cases of Status Asthmaticus. J. C. Houston, S. De Navasquez and J. R. Trounce.—p. 207.
Conservative Thoracoplasty with Extrafascial Refills. R. Y. Keers and F. J. Sambrook Gowar.—p. 214.
Results of Collapse and Conservative Therapy in Pulmonary Tuberculosis. A. F. Foster-Carter, M. Myers, D. L. H. Goddard and others.—p. 221.
Consolidation in Primary Pulmonary Tuberculosis. D. Adler and W. F. Richards.—p. 223.

Fatal Status Asthmaticus.—The clinical and pathological features are described of eight women and one man between the ages of 26 and 64 who died in status asthmaticus but who did not show any evidence of respiratory infection or pulmonary heart disease. Asthma developed in all in adult life, and in five the age of onset was 40 or over. Seven of the nine patients had had asthma for eight years or less at the time of death; a rather short history was a common factor in other cases collected from the literature. It thus appears that death in status asthmaticus occurs particularly in adult life and may occur in patients in whom asthma is of quite recent onset. The gross morbid appearance of the lungs of the authors' patients conformed to previous descriptions, namely dry, emphysematous lungs with widespread bronchial obstruction by mucus. Microscopically, extensive detachment of the ciliated epithelium was observed in all cases examined. As ciliary activity is by far the most important mechanism by which mucus is normally removed from the smaller bronchi, loss of the ciliated epithelium seems to be the most probable explanation for the accumulation of mucus and bronchial obstruction. The longer the attack of asthma, the greater is the loss of ciliated epithelium, and a stage may be reached at which mucus can no longer be removed from the smaller bronchi. Clinically this stage is characterized by failure of the asthma to respond to antispasmodics. The authors believe that this is the mechanism in status asthmaticus that proves fatal. Most of the patients with a clinical diagnosis of status asthmaticus recover, and presumably in these patients there is only partial bronchial plugging with added bronchial spasm that in time becomes amenable to treatment.

Tubercle, London

34:233-258 (Sept.) 1953

Modern Concept of Pulmonary Collapse: Study in Functional Pathology. E. G. W. Hoffstaedt.—p. 234.
Further Thoughts on Silicosis. P. Heffernan.—p. 246.
Menstrual Characteristics of Tuberculous Women. G. R. Wadsworth. —p. 249.
Tuberculosis Yesterday and Today. G. L. Cox and H. F. Hughes.—p. 251.

BOOK REVIEWS

Surgery of Trauma. Edited by Warner F. Bowers, Colonel, MC, U.S.A. With forewords by Melvin A. Casberg, M.D., Chairman, Armed Forces Medical Policy Council, and Surgeons General of Army, Navy, and Air Force. Cloth. $15. Pp. 605, with 284 illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C.2; 2083 Guy St., Montreal, 1953.

The author and 41 other contributors have produced a book that should be issued to every medical officer entering the military service. Furthermore, the book may serve as a reference for practicing physicians, who deal with trauma in civil life. The subject matter is presented in a concise and well-documented manner. The bibliography is extensive. The illustrations are well chosen and properly placed. The book is divided into sections on (1) the physiological aspects of the management of trauma, (2) regional wound surgery, (3) military considerations in wound management, and (4) study methods and research problems. Sections 2 and 3 are discussions of trauma as encountered in military surgery. The punch press type of trauma, so common in civil life, and diaphragmatic hernia caused by indirect trauma are not covered. One would expect the latter to be included in a book on the surggery of trauma, especially in our mechanized era when persons are more subject to indirect trauma, which can produce a tear in the diaphragm. Since the book deals almost exclusively with the trauma of war wounds, it is wrongly titled.

Textbook of Gynecology. By John I. Brewer, B.S., M.D., Ph.D., Professor of Obstetrics and Gynecology, Northwestern University Medical School, Chicago. Cloth. $10. Pp. 532, with 146 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1953.

The author has taken previously published material and extended it for this volume. The first half contains rapid descriptions of disease entities; the second half approaches the subject of gynecology by discussing symptoms and their various significances. This arrangement has led to repetition, a good enough teaching principle but wasteful of space and leading to some disorganization in the text. No embryology or normal anatomy is given, and normal function is scarcely mentioned. The book is apparently designed as an introduction to the study of gynecology for the undergraduate student. The photographs and photomicrographs are excellent. The text is somewhat uncritical and presents the author's conclusions without argument and with little reference to the work of others. There are no descriptions of even minor surgical procedures; the irradiation techniques are not sufficiently well described to be used directly. Where results are reported, as in the treatment of malignant disease, the newest statistics are not included. A number of statements are made that will not find general acceptance. The book will probably be most useful as a supplement to the author's own undergraduate teaching activities. It is printed on good paper, and the subject index is detailed.

Developmental Psychology. By Elizabeth B. Hurlock, Ph.D., Associate in Psychology, Graduate School, University of Pennsylvania, Philadelphia. Cloth. $6. Pp. 556, with 62 illustrations. McGraw-Hill Book Company, Inc., 330 W. 42nd Street, New York 36; 95 Farringdon Street, London, E.C.4, 1953.

A detailed outline of the changes that take place in human beings from conception to death is the principal content of this volume. In an easy and interesting style the entire developmental process is outlined for each age. Though this is essentially a treatise on psychology and the emotional and social changes accompanying each life period, there is also a brief but reasonably complete description of the changes in physical structure and functions that underlie the changes in psychological development.

After an introduction entitled "Growth and Decline," the general plan of the book is developed in chapters entitled "How Life Begins," "Infancy," "Babyhood," "Early Childhood," "Late Childhood," "Puberty," "Early Adolescence," "Late Adolescence," "The 'Mature' Adult," "Adulthood," and "Old Age." Within each of these physical development, motor skills, emotions, social behavior, interests, religious attitudes and behavior, sex interests and behavior, moral behavior, family relationships, and personality are discussed. Constant reference is made to the works of all of the principal authors in these fields. Supplementing the text is a list of visual aids, an extensive bibliography, and an index.

This book has been designed to give "as complete a picture of the developmental changes of the total life span of the human being as is possible within the two covers of one book." It is intended for use as a text or reference volume in university courses on developmental psychology. It would be suited not only for this purpose but also for a reference volume for physicians who are constantly dealing with people in all the age groups mentioned and who could check their observations of behavior with the observed norms set forth in this volume.

A Century of Medicine, 1848-1948: The History of the Medical Society of the State of Pennsylvania. Edited by Howard Kistler Petry, M.D. Cloth. Pp. 404, with illustrations. Medical Society of the State of Pennsylvania, 230 State St., Harrisburg, 1952.

This centennial history, covering the years 1848-1948, is more than just the interesting story of the birth, growth, and development of one of the nation's leading state medical societies. Because Pennsylvania, which often has been called "the birthplace of American medicine," can point to so many "firsts" in medical history, the book also reflects the nation's medical progress and the sweeping scientific, social, and economic changes that affected the practice of medicine during the past 100 years. Its chapters are studded with the names of physicians, medical educators, hospitals, medical schools, and other persons and institutions well known for their contributions to the advancement of American medicine. In addition to tracing the general history of the society, the book also has special chapters on the woman's auxiliary, the scientific sections, the county societies, permanent secretaries, publications, present functions and activities, and the centennial celebration.

Manic-Depressive Disease: Clinical and Psychiatric Significance. By John D. Campbell, M.D., Attending Psychiatrist, Georgia Baptist Hospital and St. Joseph's Infirmary, Atlanta. Cloth. $6.75. Pp. 403, with 2 illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C.2; 2083 Guy Street, Montreal, 1953.

This manual for the general physician and psychiatrist discusses manic-depressive disease from a physiological viewpoint. It is a survey of the disease based on the study and follow-up of a group of 522 selected patients seen in the author's private practice. Following a historic review of manic-depressive disease, with emphasis on Kraepelin's description of the condition, Dr. Campbell presents his views on the nature of the disturbance and methods of treatment. The
autonomic and emotional disturbances and mental sympto
of the disease occurring in the cycloid personality are le
scribed. A physiological disturbance of the autonomic be
system is considered the causative factor, and con of
flicts the symptoms. Environmental factors that at
autonomic balance in a constitutionally r
are considered by the author to be the ld
Other topics that are discussed in the or
trative case material include manic-de
dren and the social complications
marital problems, excessive use of
cide. Treatment of the cycl
manic-depressive disease in y to t

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

Semaine des Hôpitaux de Paris

29:2889-2940 (Oct. 2) 1953

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Brill-Symmer's Disease? Clinical and Morphological Considerations on a Case of Follicular Lymphoblastoma. M. Del Dotto and A. Torrini. —p. 345.
*Stellate Ganglion Block in Treatment of Hemiplegia Secondary to Cerebral Thrombosis and Embolism. U. Principe.—p. 352.

Stellate Ganglion Block in Hemiplegia Secondary to Cerebral Thrombosis and Embolism.—Patients with hemiplegia secondary to cerebral thrombosis or cerebral embolism are treated at the University of Florence surgical clinic with block of the stellate ganglion on the side opposite that involved by the paralysis. The anterior approach of Leriche or the posterior paravertebral approach of Mandl is used. The latter is preferred, since there is less danger of puncturing the subclavian artery, the rami of the brachial plexus, or the pleura. As a rule, one 20 cc. injection of a 1% solution of procaine hydrochloride without epinephrine is given every day. But, if the first injection causes a pronounced drop in the blood pressure, the ganglion is blocked every other day. A successful injection is followed by the onset of Horner's syndrome; if this does not develop, another injection is given within 20 minutes. The best results are obtained in young patients in whom the treatment is instituted as soon as possible after the stroke occurs. The author gave more than 300 injections to 18 persons with hemiplegia. This was secondary to cerebral thrombosis in 14 aged patients and to cerebral embolism in 4 patients with heart disease. Each patient was given from 10 to 30 injections; there were no untoward effects. The results evaluated 10 days after the last injection were good in six patients who made a complete recovery, fair in eight who recovered partially, and poor in four patients. Treatment was instituted too late in these patients, and their condition remained unchanged. The author never uses this treatment for patients in whom the stroke is caused by a cerebral hemorrhage. The vasodilatation that follows the interruption of the sympathetic innervation may contribute to increase the hemorrhage and thus aggravate the state of coma and the paralysis.

Thorax, London

8:167-250 (Sept.) 1953

Ulcero-Caseous Tuberculous Bronchitis: Method of "Spread" in Pulmonary Tuberculosis. J. W. Clegg.—p. 167.
Fibroma of Visceral Pleura. C. P. Thomas and C. E. Drew.—p. 180.
Surgical Anatomy of Pulmonary Vessels. J. C. Van der Spuy.—p. 189.
Fatal Bronchial Asthma: Series of 15 Cases with Review of Literature. B. V. Earle.—p. 195.
*Clinical and Pathological Study of Fatal Cases of Status Asthmaticus. J. C. Houston, S. De Navasquez and J. R. Trounce.—p. 207.
Conservative Thoracoplasty with Extrafascial Refills. R. Y. Keers and F. J. Sambrook Gowar.—p. 214.
Results of Collapse and Conservative Therapy in Pulmonary Tuberculosis. A. F. Foster-Carter, M. Myers, D. L. H. Goddard and others.—p. 221.
Consolidation in Primary Pulmonary Tuberculosis. D. Adler and W. F. Richards.—p. 223.

Fatal Status Asthmaticus.—The clinical and pathological features are described of eight women and one man between the ages of 26 and 64 who died in status asthmaticus but who did not show any evidence of respiratory infection or pulmonary heart disease. Asthma developed in all in adult life, and in five the age of onset was 40 or over. Seven of the nine patients had had asthma for eight years or less at the time of death; a rather short history was a common factor in other cases collected from the literature. It thus appears that death in status asthmaticus occurs particularly in adult life and may occur in patients in whom asthma is of quite recent onset. The gross morbid appearance of the lungs of the authors' patients conformed to previous descriptions, namely dry, emphysematous lungs with widespread bronchial obstruction by mucus. Microscopically, extensive detachment of the ciliated epithelium was observed in all cases examined. As ciliary activity is by far the most important mechanism by which mucus is normally removed from the smaller bronchi, loss of the ciliated epithelium seems to be the most probable explanation for the accumulation of mucus and bronchial obstruction. The longer the attack of asthma, the greater is the loss of ciliated epithelium, and a stage may be reached at which mucus can no longer be removed from the smaller bronchi. Clinically this stage is characterized by failure of the asthma to respond to antispasmodics. The authors believe that this is the mechanism in status asthmaticus that proves fatal. Most of the patients with a clinical diagnosis of status asthmaticus recover, and presumably in these patients there is only partial bronchial plugging with added bronchial spasm that in time becomes amenable to treatment.

Tubercle, London

34:233-258 (Sept.) 1953

Modern Concept of Pulmonary Collapse: Study in Functional Pathology. E. G. W. Hoffstaedt.—p. 234.
Further Thoughts on Silicosis. P. Heffernan.—p. 246.
Menstrual Characteristics of Tuberculous Women. G. R. Wadsworth. —p. 249.
Tuberculosis Yesterday and Today. G. L. Cox and H. F. Hughes.—p. 251.

BOOK REVIEWS

Surgery of Trauma. Edited by Warner F. Bowers, Colonel, MC, U.S.A. With forewords by Melvin A. Casberg, M.D., Chairman, Armed Forces Medical Policy Council, and Surgeons General of Army, Navy, and Air Force. Cloth. $15. Pp. 605, with 284 illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C.2; 2083 Guy St., Montreal, 1953.

The author and 41 other contributors have produced a book that should be issued to every medical officer entering the military service. Furthermore, the book may serve as a reference for practicing physicians, who deal with trauma in civil life. The subject matter is presented in a concise and well-documented manner. The bibliography is extensive. The illustrations are well chosen and properly placed. The book is divided into sections on (1) the physiological aspects of the management of trauma, (2) regional wound surgery, (3) military considerations in wound management, and (4) study methods and research problems. Sections 2 and 3 are discussions of trauma as encountered in military surgery. The punch press type of trauma, so common in civil life, and diaphragmatic hernia caused by indirect trauma are not covered. One would expect the latter to be included in a book on the surgery of trauma, especially in our mechanized era when persons are more subject to indirect trauma, which can produce a tear in the diaphragm. Since the book deals almost exclusively with the trauma of war wounds, it is wrongly titled.

Textbook of Gynecology. By John I. Brewer, B.S., M.D., Ph.D., Professor of Obstetrics and Gynecology, Northwestern University Medical School, Chicago. Cloth. $10. Pp. 532, with 146 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1953.

The author has taken previously published material and extended it for this volume. The first half contains rapid descriptions of disease entities; the second half approaches the subject of gynecology by discussing symptoms and their various significances. This arrangement has led to repetition, a good enough teaching principle but wasteful of space and leading to some disorganization in the text. No embryology or normal anatomy is given, and normal function is scarcely mentioned. The book is apparently designed as an introduction to the study of gynecology for the undergraduate student. The photographs and photomicrographs are excellent. The text is somewhat uncritical and presents the author's conclusions without argument and with little reference to the work of others. There are no descriptions of even minor surgical procedures; the irradiation techniques are not sufficiently well described to be used directly. Where results are reported, as in the treatment of malignant disease, the newest statistics are not included. A number of statements are made that will not find general acceptance. The book will probably be most useful as a supplement to the author's own undergraduate teaching activities. It is printed on good paper, and the subject index is detailed.

Developmental Psychology. By Elizabeth B. Hurlock, Ph.D., Associate in Psychology, Graduate School, University of Pennsylvania, Philadelphia. Cloth. $6. Pp. 556, with 62 illustrations. McGraw-Hill Book Company, Inc., 330 W. 42nd Street, New York 36; 95 Farringdon Street, London, E.C.4, 1953.

A detailed outline of the changes that take place in human beings from conception to death is the principal content of this volume. In an easy and interesting style the entire developmental process is outlined for each age. Though this is essentially a treatise on psychology and the emotional and social changes accompanying each life period, there is also a brief but reasonably complete description of the changes in physical structure and functions that underlie the changes in psychological development. After an introduction entitled "Growth and Decline," the general plan of the book is developed in chapters entitled "How Life Begins," "Infancy," "Babyhood," "Early Childhood," "Late Childhood," "Puberty," "Early Adolescence," "Late Adolescence," "The 'Mature' Adult," "Adulthood," and "Old Age." Within each of these physical development, motor skills, emotions, social behavior, interests, religious attitudes and behavior, sex interests and behavior, moral behavior, family relationships, and personality are discussed. Constant reference is made to the works of all of the principal authors in these fields. Supplementing the text is a list of visual aids, an extensive bibliography, and an index.

This book has been designed to give "as complete a picture of the developmental changes of the total life span of the human being as is possible within the two covers of one book." It is intended for use as a text or reference volume in university courses on developmental psychology. It would be suited not only for this purpose but also for a reference volume for physicians who are constantly dealing with people in all the age groups mentioned and who could check their observations of behavior with the observed norms set forth in this volume.

A Century of Medicine, 1848-1948: The History of the Medical Society of the State of Pennsylvania. Edited by Howard Kistler Petry, M.D. Cloth. Pp. 404, with illustrations. Medical Society of the State of Pennsylvania, 230 State St., Harrisburg, 1952.

This centennial history, covering the years 1848-1948, is more than just the interesting story of the birth, growth, and development of one of the nation's leading state medical societies. Because Pennsylvania, which often has been called "the birthplace of American medicine," can point to so many "firsts" in medical history, the book also reflects the nation's medical progress and the sweeping scientific, social, and economic changes that affected the practice of medicine during the past 100 years. Its chapters are studded with the names of physicians, medical educators, hospitals, medical schools, and other persons and institutions well known for their contributions to the advancement of American medicine. In addition to tracing the general history of the society, the book also has special chapters on the woman's auxiliary, the scientific sections, the county societies, permanent secretaries, publications, present functions and activities, and the centennial celebration.

Manic-Depressive Disease: Clinical and Psychiatric Significance. By John D. Campbell, M.D., Attending Psychiatrist, Georgia Baptist Hospital and St. Joseph's Infirmary, Atlanta. Cloth. $6.75. Pp. 403, with 2 illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C.2; 2083 Guy Street, Montreal, 1953.

This manual for the general physician and psychiatrist discusses manic-depressive disease from a physiological viewpoint. It is a survey of the disease based on the study and follow-up of a group of 522 selected patients seen in the author's private practice. Following a historic review of manic-depressive disease, with emphasis on Kraepelin's description of the condition, Dr. Campbell presents his views on the nature of the disturbance and methods of treatment. The autonomic and emotional disturbances and mental symptoms of the disease occurring in the cycloid personality are described. A physiological disturbance of the autonomic nervous system is considered the causative factor, and conscious conflicts the symptoms. Environmental factors that upset the autonomic balance in a constitutionally predisposed person are considered by the author to be the precipitating agents. Other topics that are discussed in the book along with illustrative case material include manic-depressive disease in children and the social complications of the disease, such as marital problems, excessive use of drugs, homicide, and suicide. Treatment of the cyclothymic personality and mild manic-depressive disease includes removing aggravating en-

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These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

vironmental factors, using psychotherapy, aiding relaxation, and prescribing appropriate drugs. A review of the use of electroconvulsive therapy, electrostimulation therapy, psychosurgery, and current research theories of the nature of the autonomic disturbance in manic-depressive disease is included.

Problems in the Anatomy of the Pelvis: An Atlas. By Eduard Uhlenhuth, Ph.D., Professor of Anatomy, University of Maryland, School of Medicine, Baltimore. With assistance of DeWitt T. Hunter, M.D., Instructor in Anatomy. Cloth. $10. Pp. 206, with 82 illustrations by William E. Loechel, Medical Artist in Department of Anatomy. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C.2; 2083 Guy St., Montreal, 1953.

In this atlas the retrovesical space was selected as a focal point of discussion because of its importance in pelvic surgery. This is true because every subperitoneal space is related to the retrovesical space and every pelvic organ is in the immediate environment of this space. The presentation that relates the retrovesical space and the ureters is especially good. The "inferior hypogastric wing" received special consideration in order to stress its importance as a conduit of nerves and vessels and the part it plays in supporting the bladder and prostate gland. Although acceptable, the concept of the pubococcygeus, the puborectalis, and the iliococcygeus as the component parts of the levator ani might be objectionable to some anatomists. Other differences in opinion might arise in nomenclature.

The material presented is good although the method of presentation is unduly complex. The reviewer finds it difficult to look on one page where the structures are numbered and then to have to seek on an opposing page for the identification of the number and structure. It would have added much to this fine work had the artist and author synchronized their work so as to label each structure more directly. Particularly is this true of figure J 2 on page 125, where 40 structures have been numbered. It is a tiresome task to refer to the opposite page for so many identifications. This book should be useful as a reference to those who have acquired some knowledge of anatomy in their undergraduate courses. It can be recommended to graduate students, hospital staff members, surgeons, and anatomists interested in this region of the body.

A Ciba Foundation Symposium: The Spinal Cord. Editor for Ciba Foundation: G. E. W. Wolstenholme, O.B.E., M.A., M.B. Consulting editors: J. L. Malcolm, M.B., Ch.B., B.Med.Sc., and J. A. B. Gray, M.A., M.B., B.Chir. Assisted by Jessie S. Freeman, M.B., B.S., D.P.H. Cloth. $6.50. Pp. 300, with 112 illustrations. Little, Brown & Company, 34 Beacon St., Boston 6, 1953.

This book is the record of a symposium on the physiology of the spinal cord given at a meeting held in London from Feb. 26 to 28, 1952. The fifty or so participants included, among others, Adrian, Barron, Bremer, Bülbring, Creed, Dale, Eccles, Feldberg, Liddell, Matthews, Romanes, Skoglund, and Young. They surveyed the more recent advances concerning the functioning of the spinal cord. Of current clinical import there is little information save perhaps on the effects of various pharmaceutical agents on cord activity, which may conceivably be of value in dealing with spasticity. The large clear printing on nonreflective paper, the excellent diagrams, and author and subject index make a fine, compact volume that should be most useful to the neurophysiologist and to those doing clinical research in neurology.

Antibiotics. By Robertson Pratt, Ph.D., Professor of Pharmacognosy and Plant Physiology, University of California College of Pharmacy, San Francisco, and Jean Dufrenoy, D. Sci., Research Associate in Antibiotics, University of California College of Pharmacy. Second edition. Cloth. $7.50. Pp. 398, with 87 illustrations. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5; Aldine House, 10-13 Bedford St., London, W.C.2; 2083 Guy St., Montreal, 1953.

This rather extraordinary volume covers the whole field of the antibiotics. Experimental work, the practical problems of production, the clinical use, and the philosophical implications of the advent of antibiotics are discussed. The presentation is somewhat marred by the use of technical jargon, as for example, "to biosynthesize" and "renal-ligated." Some inaccuracies are found primarily in the pages that deal with the clinical usage of the antibiotics. For example, it is stated that "the virtual lack of toxicity of penicillin . . . makes this antibiotic the drug of choice" in certain infections. It is hard to reconcile this statement with the known and increasing frequency of reactions to penicillin. The discussion of the use of priming doses of antibiotics is not in line with current thought. The lack of recognition of the rapid increase in the resistance of many micro-organisms to the antibacterial effects of streptomycin is surprising. These examples and others that appear in the clinical sections of this book give it a real unevenness. Although interesting, this treatise cannot be highly recommended to the practicing physician. It is much better written from the point of view of experimental and industrial developments relative to antibiotics.

Recreation for the Aging. Prepared for National Recreation Association by Arthur Williams. Cloth. $3. Pp. 192. Association Press, National Council of the Y. M. C. A., 291 Broadway, New York 7, 1953.

Prepared for the National Recreation Association, this well-written volume is a practical planning guide for those interested in recreational programs for older groups. It draws extensively from successful programs in action throughout the country and reveals thereby that an amazing number and variety of excellent, organized recreational group activities for the elderly are already in operation. The point of view and approach to the subject is sound in the light of present-day thinking. For instance, the author writes, "Inactivity is bad for the aging. The rest cure for old age has been discredited in favor of stimulating and vigorous activity suited to the capacities of the individual. If mental and physical deterioration is to be avoided, new interests and new goals must be found or old interests and aspirations rediscovered. . . . Recreation provides many opportunities for new personal contacts through which older folks can find escape from loneliness. . . ." Throughout the volume it is made clear that recreational activities, to be successful and worth while, must and can be something far more significant than merely "killing time."

Fourteen chapters are devoted to the organization and financing of recreation programs and the conduct of their various forms such as camping, arts, crafts, and hobbies. Other chapters discussed are recreation for special groups such as the handicapped, homebound, and institutionalized and for special agencies such as church, industry, and labor. There is a comprehensive bibliography and a complete index. There is more to this book than the title suggests. Anyone who has anything at all to do with recreation for older persons will benefit by reading it.

Hoppe-Seyler/ Thierfelder Handbuch der physiologisch- und pathologisch-chemischen Analyse für Ärzte, Biologen und Chemiker. Herausgegeben von Konrad Lang, Emil Lehnartz, unter Mitarbeit von Günther Siebert. Erster Band: Allgemeine Untersuchungsmethoden, erster Teil. Bearbeitet von F. Ender, et al. Tenth edition. Cloth. 185 marks; subscription price 148 marks. Pp. 762, with 502 illustrations. Springer-Verlag, Reichpietschufer 20, Berlin W. 35 (West-Berlin); Neuenheimer Landstrasse 24, Heidelberg; Göttingen, 1953.

The five volumes that will make up the 10th edition of this famous handbook are being issued separately. The fifth volume on organs, body fluids, and secretions came out earlier in 1953 and was reviewed in THE JOURNAL (Sept. 12, 1953, page 177). Like volume 5, volume 1 is clearly written, logically organized, thoroughly indexed, copiously illustrated, and beautifully printed and bound. It should reach a wider audience than volume 5 because, in addition to its interest to the medical profession, the general methods that are covered here serve also as tools for research in physiological and pathological chemistry and because the individual monographs often are as good as the textbooks available to the general chemist. The methods that are included in this volume are: use of the polarizing microscope on crystals, micro methods including spot tests, electrophoresis, use of the ultracentrifuge, chromatography, counter-current extraction, microscopy, absorption and emission spectroscopy, nephelometry, refractometry and interferometry, polarimetry, and electrical conductivity. The last three chapters are on hydrogen-ion concentration (pH), colorimetric measurement of pH, and redox potentials. Each chapter has extensive bibliographies.

World Distribution of Dengue and Yellow Fever. Atlas of Distribution of Diseases—plate 5. Map reprinted from Geographical Review, vol. 42, no. 2, 1952. Paper. Pp. 14. American Geographical Society, Broadway at 156th Street, New York 32, 1952.

World Distribution of Plague. Atlas of Diseases—plate 6. Map reprinted from Geographical Review, vol. 42, no. 4, 1952. Paper. Pp. 7. American Geographical Society, Broadway at 156th Street, New York 32, 1952.

World Distribution of Leprosy: Leprosaria Shown on Map. Atlas of Diseases—plate 7. Paper. Pp. 20. American Geographical Society, Broadway at 156th Street, New York 32, 1953.

Study in Human Starvation: Sources of Selected Foods. Atlas of Diseases—plate 8. Paper. Pp. 2. American Geographical Society, Broadway at 156th Street, New York 32, 1953.

Study in Human Starvation: Diets and Deficiency Diseases. Atlas of Diseases—plate 9. Paper. Pp. 18. American Geographical Society, Broadway at 156th Street, New York 32, 1953.

These maps are a continuation of a series. Plate 5, "World Distribution of Dengue and Yellow Fever," shows areas of urban epidemics, sylvatic epidemics, and endemic areas of yellow fever; presents a table showing the distribution and habits of known vector species; and lists places where mouse protection tests for yellow fever immune bodies have been made on human beings in recent years. Epidemic and endemic dengue areas are also shown. Plate 6, "World Distribution of Plague," in addition to maps, presents a table showing the domestic and sylvatic rodent host and vector by countries. One insert map shows the length of the plague season in various locations. Plate 7, "World Distribution of Leprosy," shows the location of leprosaria and contains a table showing the number of known and estimated cases by countries (for the United States: 390 and 2,000 respectively). Plate 8, "Study in Human Starvation: Sources of Selected Foods," in addition to maps, contains a table showing the production of food animals, fish, cereals, and fruits; a table showing the food supply in grams per capita per day for various countries; a table of the composition of foods; and a table of the per cent of the total area in arable land and in pasture land by countries. Plate 9, "Study in Human Starvation: Diets and Deficiency Diseases," indicates the areas in which significant prevalence rates for the avitaminoses are found and areas in which diets are deficient in calories. The maps are well printed, easy to read, and contain notes on epidemiology as well as reference lists on the backs divided into basic sources and selected bibliographies by countries.

A Source-Book of Medical Terms. By Edmund C. Jaeger, D.Sc. Foreword by Irvine H. Page, M.D., Director, Research Division, Cleveland Clinic Foundation, Cleveland. Cloth. $5.50. Pp. 145, with illustrations by Lloyd Mason Smith and author. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1953.

In this book have been assembled in alphabetical sequence the numerous word elements, combining forms, prefixes, and suffixes from which modern medical terms have been coined. Following each are the Greek, Latin, French, or other words from which it has been derived, together with the original meanings. For those readers who have had no training in Greek and Latin grammar, the various forms of nouns, adjectives, and verbs as well as related words needed to account for the complete spelling of the majority of terms employed in modern medical writing, are presented succinctly. With each entry numerous examples are offered to show how the word elements have been used in the construction of medical terms. These examples, taken from medical dictionaries, are dissected into basic formative elements. No medical dictionary has ever attempted this type of etymological treatment. In making readily available adequate information on the etymology of many medical terms, a distinct and helpful contribution is made. Because this book makes the origin and literal meanings of words clear to the inquisitive reader and tells of their application in special cases, as well as their history and how they happen to be spelled as they are, the information in this small book is of inestimable value to all who deal with the written and the spoken medical word.

A Primer of Cardiology. By George E. Burch, M.D., F.A.C.P., Henderson Professor of Medicine, Tulane University School of Medicine, New Orleans. Second edition. Cloth. $5.50. Pp. 339, with 214 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1953.

A perusal of this second edition indicates that it will create as much interest as the first. New material has been included and viewpoints changed without sacrificing the style that made the first edition popular. The section on congenital heart disease has been greatly expanded, and alterations appear in regard to the mechanisms of congestive failure and edema. The discussions of the treatment of congestive heart failure, coronary occlusion, and angina pectoris have also been expanded, and that of the treatment of syphilis has been brought up to date. Throughout, emphasis has been placed on the correlation of basic principles of cardiovascular physiology with clinical cardiac states. Controversy has been avoided, and the text has been profusely documented with illustrations. Occasional errors in proofreading mar the otherwise excellent presentation, e. g., figure 149 erroneously shows a diastolic pressure of 8 mm. Hg in the normal aorta, and, on page 248 when dealing with cardiac catheterization, the author states that an increase in left ventricular pressure occurred when obviously the right ventricular pressure was meant. These will doubtless be corrected in reprinting. In an era of a plethora of texts on cardiovascular disease, this primer will continue to make a prominent place for itself. It is highly recommended.

Inhalation Therapy and Resuscitation. By Meyer Saklad, M.D., Director, Department of Anesthesiology, Rhode Island Hospital, Providence, R. I. Publication number 156, American Lecture Series, monograph in Bannerstone Division of American Lectures in Anesthesia. Edited by John Adriani, M.D., Director, Department of Anesthesia, Charity Hospital, New Orleans. Cloth. $7.50. Pp. 343, with 110 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1953.

In a world increasingly beset by industrial and automobile accidents and by military casualties, a thorough and practical book on resuscitation and oxygen therapy is greatly needed. In the treatment of the seriously ill patient, a clear understanding of anoxia is necessary. These needs have been filled by Dr. Saklad, who has had many years of experience in this and related fields. Conditions requiring oxygen therapy or resuscitation are considered from the physiological and pathological standpoint, and the causes, symptoms, and treatment are thoroughly explained on a practical level. The advantages and disadvantages of alternative procedures are discussed, and specific recommendations are made for various situations. The advantages and disadvantages, the best fields of usefulness, and the mechanisms of operation of the numerous devices for oxygen therapy and resuscitation now available are thoroughly explained. This work has an excellent outline, is clearly written, and contains many helpful illustrations.

The Obstetrical Forceps. By L. V. Dill, M.D., F.A.C.S., Head, Obstetrics and Gynecology, Yater Clinic, Washington, D. C. Publication number 150, American Lecture Series, monograph in Bannerstone Division of American Lectures in Gynecology and Obstetrics, edited by E. C. Hamblen, B.S., M.D., F.A.C.S., Professor of Endocrinology, Duke University School of Medicine, Durham, North Carolina. Cloth. $5.25. Pp. 156, with 86 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Illinois; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1953.

This is the most recent addition to the obstetric-gynecologic contributions in the American Lecture Series. It does not report original contributions nor is there any evaluation of results. It is the sort of presentation that one might use to supplement a demonstration with an obstetric manikin or might make available to an intern for his clinical guidance. The use of all of the general types of obstetric forceps is discussed with detailed attention to the author's conclusions as to indications and application. It is in this particular field that the best portions of the book are found. There is a short chapter on fetal damage from forceps. The volume is printed on glossy paper and is satisfactorily illustrated with somewhat schematic drawings and with photographs. There is a subject index and a sketchy bibliography.

QUERIES AND MINOR NOTES

DUMPING SYNDROME

To the Editor:—*1. Does exercise or tension (anxiety, worry) cause hypoglycemia in a normal person or in a person with dumping syndrome? 2. How does coffee, tea, or amphetamine affect a person with hypoglycemia due to dumping syndrome? 3. Is the result of an intravenous glucose tolerance test abnormal in a patient with dumping syndrome?*

M.D., Ohio.

Answer.—Exercise, unless severe and prolonged, does not cause significant hypoglycemia in a normal person. Nervous tension commonly characterizes otherwise normal persons who experience "functional" hypoglycemia some hours after a meal (Portis and Zitman: *J. A. M. A.* **121**:569 [Feb. 20] 1943; Conn: ibid. **134**:130 [May 10] 1947). Relief is afforded by a low carbohydrate, high protein, and high fat diet, and possibly by atropine. The dumping syndrome consists of weakness, dizziness, flushing, warmth, perspiration, epigastric fulness, palpitation, and nausea, appearing immediately or within a few minutes after eating. The cause is believed to be sudden distention or irritation of the jejunum due to abnormally rapid emptying of the stomach. The syndrome is seen most frequently after gastroenterostomy or gastric resection, but has been described also in hypersensitive, overly reactive persons who have had no gastric operation (Alvarez, W. C.: *Gastroenterology* **13**:212, 1949). Hypoglycemia is not a necessary part of the dumping syndrome, but some patients with the latter condition, whether it is of surgical origin or not, experience hyperglycemia soon after eating, followed by a reactive hypoglycemia two or three hours later. Whether exercise further lowers the blood sugar in such cases is a question on which there is no direct evidence. Presumably it would if exertion were excessive. Whether nervous tension would exaggerate the hypoglycemia due to the nonsurgical dumping syndrome is a matter for speculation.

Coffee and tea have no appreciable influence on the blood sugar or the dumping syndrome. Amphetamine has little or no effect on hypoglycemia. In doses of 10 to 30 mg., it is said to delay gastric emptying (Ivy, A. C., and Krasno, L. R.: *War Med.* **1**:15, 1941). To the extent that this is true, the drug might be expected to retard the rapid discharge of food into the intestine, thus minimizing the excessive rise and fall of the blood sugar. Another review, however (Reifenstein, E. C., and Davidoff, E.: *New York J. Med.* **39**:42, 1939) points out that reports on the action of amphetamine on gastric motility are conflicting and that results vary according to original tonicity of the stomach. The result of an intravenous glucose tolerance test is not abnormal in a patient with the dumping syndrome.

GLUCOSE SOLUTION INTRAMUSCULARLY

To the Editor:—*Can from 2.5 to 5% glucose solution be given intramuscularly without causing sloughing? In what amount can it be given?* *H. E. Dester, M.D., India.*

Answer.—Glucose may be given intramuscularly in concentrations up to 5% without causing sloughing. The amount that may be given varies with the state of dehydration, circulation, and pain from distention and irritation. In dehydrated patients, glucose can be given in isotonic strength by hypodermoclysis in amounts up to 80 cc. per kilogram of body weight quite readily without undue distention of the tissues, especially when it is used with hyaluronidase. This is preferred when extravascular fluid administration is desired.

FACE MASKS

To the Editor:—*Has anyone proved the value of face masks to prevent the dissemination of tubercle bacilli? In our hospital small cellulose masks are worn by the patient and visitors. I would appreciate references on this subject.*

John C. Meyers, M.D., San Francisco.

Answer.—The permeability of face masks depends on such factors as the tightness of the mesh, the size of the holes, the number of holes per square centimeter, and the speed of the droplets. The common operating room mask of two layers of gauze with a heavy layer of cotton flannel between will retain most bacilli and droplets of moisture with ordinary breathing, but explosive coughing will probably drive a few bacilli through the openings. The openings in the mesh of cotton flannel are minute, and the air pathway through the mask is devious, so that particles are almost sure to be caught on the cotton fibers. Tight cellulose masks are better in some respects and are fairly safe for all ordinary purposes. The holes are smaller and farther apart. Jennings (*Am. Rev. Tuberc.* **32**:304, 1935) showed that one thickness of a cellulose paper napkin was nearly as effective as 10 thicknesses of ordinary gauze. The openings are not one-tenth the size of those of the woven gauze. The culture experiments roughly parallel the aggregate size of the openings.

Obviously, the problem of the safety of masks is a relative one. No mask will ever be made through which a few bacilli may not be driven with explosive coughing, but if 95% of the bacilli are held back the danger will be greatly reduced. Only the smallest droplets will pass through, and these contain small doses of bacilli that will infect fewer persons than the large clumps thrown out in an uncovered cough. The Curity mask with a pliable nose piece is probably one of the best masks for all purposes. It is a specially tightly woven filter fabric of cotton flannel covered on both sides by fine mesh gauze, with tapes and flexible metal nosepiece. It is made to fit the face and gives comfort and fits tightly against the nose, cheeks, and chin. No mask should be worn until it is too moist, and they should be changed often and washed and sterilized with great care.

ULTRAVIOLET LIGHT

To the Editor:—*Kindly tell me the current opinion about the use of ultraviolet light in the nasal and oral cavities. In what diseases could it be of value? Would a nasal application giving off ultraviolet radiation be of any practical value? What would be a safe dosage, if any?*

Seymour B. Jacobson, M.D., New York.

Answer.—Ultraviolet light for use in the oral and nasal cavities does not seem to be as popular at present as it was some years ago. It has been reported that the local application of ultraviolet light may serve as adjunctive therapy in the treatment of nasal and oral tuberculous lesions. In some cases, it is also useful as adjunctive therapy in the management of infected wounds, septal ulcers, and certain oral dermatoses. The value of its use in the treatment of hay fever has not been convincing, and the use of ultraviolet radiation for nasal sinus infections is practically of no value because it is unable to reach the sinuses involved. The inability of ultraviolet light to penetrate through a thin pyogenic membrane further detracts from its value. There is a tendency, in the case of local application of ultraviolet light, to damage tissue as well as bacteria with the resulting possible necrosis of normal tissue.

It is customary to apply local ultraviolet radiation by means of the water-cooled quartz mercury vapor lamp (Kromayer lamp) wherein a quartz rod applicator is placed near the lesion. Since, because of the proximity of the applicator to the subject, it is impossible to apply intense amounts of ultraviolet energy, short exposure times are required. The dosage for the Kromayer lamp is determined by a slight modification

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The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

of the usual cutaneous test for determining the minimal erythemal dose. The minimal erythemal dose is determined by exposing small areas of the forearm, through holes in a patch test cuff, for varying periods of time. In the case of Kromayer type lamp, an exposure of 5 seconds in a person of average skin pigmentation is the maximal time usually used for this test. The erythema can be expected to develop between 12 and 24 hours after this exposure. The time needed for the least perceptible erythema to develop is considered the minimal erythemal dose for the particular lamp tested when operated at the same distance from the patient. In applying radiation it is desirable on initial exposure to use a dose that is a fraction of the minimal erythemal dose. Subsequent exposure times are increased.

DIARRHEA IN DIABETICS

To the Editor:—*For 20 years a 65-year-old man has had diabetes, which is well controlled with 40 units of protamine zinc insulin daily. His general condition is good, and there are no significant complications. In the past six years he has had alternating constipation and diarrhea, being constipated for from four to six days and then having diarrhea for from two to four days. The diarrhea is often of such severity that he becomes prostrate. Various clinics and many internists and radiologists have failed to reveal any intestinal lesion. Stool examinations have never revealed blood, pus, mucus, ova, or parasites. All treatment to date including large parenteral doses of vitamin* B_{12} *has been of no avail. Have you any suggestions on therapy?*

Lewis R. Elias, M.D., Montgomery, W. Va.

Answer.—Nocturnal diarrhea usually occurs in younger diabetic patients, but in Joslin's series of 96 cases, the ages varied from 20 and 79 years and the average duration of the diabetes was 9 years. In the series reported by Joslin and associates (Treatment of Diabetes Mellitus, ed. 9, Philadelphia, Lea and Febiger, 1952, pages 485 and 486) and Rundles (*Medicine* **24**:111, 1945; *Bull. New York Acad. Med.* **26**:598, 1950) constipation alternated with diarrhea. Previous poor diabetic control was outstanding in each instance, and diabetic neuritis preceded the diarrhea in 40 patients. One of the most definite diagnostic points was the high level of total protein in the spinal fluid, averaging 88 mg. per 100 cc. in 17 of 18 cases. What was the total protein level in the spinal fluid of this patient? Did he have pernicious anemia? Was free hydrochloric acid present in his gastric secretion? Was the serum amylase level normal? Was there evidence of impaired digestion of fat and an excess of muscle fiber in the feces? Invariably the search should be pressed for organic causes. The only treatment that has been found at all helpful, besides the low residue, nonirritating diet, has been crude liver extract given parenterally. The injection of from 2 to 4 cc. of the extract daily for a few days, followed by a maintenance dose of 1 or 2 cc. weekly, usually proves adequate. Lapses in treatment are usually followed by a relapse of diarrhea, according to the Joslin report.

OTOSCLEROSIS

To the Editor:—*A woman, aged 36, has had progressive loss of hearing and tinnitus aurium for a year. Thorough examination fails to reveal any abnormality. At the onset she was anemic but with liver therapy her blood returned to normal. The eustachian tubes have also been intubated and inflated and injections of Jacobson's solution and high vitamin and high protein diet given. I see no improvement with all this therapy, and the patient states that the symptoms are as bad if not worse. What will alleviate this condition?*

Daniel Burman, M.D., Bronx, N. Y.

Answer.—Bilateral progressive loss of hearing with marked tinnitus in which examination of the ears reveals normal tympanic membranes and eustachian tubes and which all treatment fails to improve usually means otosclerosis. Inasmuch as any known therapy is useless, if the deafness progresses to so much that normal conversation is irksome at a distance of 2 or 3 ft., a hearing aid should be prescribed and the study of lip reading instituted.

BLOCKED FALLOPIAN TUBES

To the Editor:—*A patient has fallopian tubes that will not open under a pressure of 200 mm. Hg. She has no history of infection and has had one pregnancy, which ended in miscarriage. Should surgical opening of the fallopian tubes be attempted in her case?*

Ursula G. Mandel, M.D., Los Angeles, Calif.

Answer.—The failure of gas to pass through the fallopian tubes at a pressure of 200 mm. Hg does not necessarily mean organic tubal blockage. Tubal spasm may prevent the passage of gas. The Rubin insufflation should be repeated after the patient has received an antispasmodic drug such as glyceryl trinitrate (Nitroglycerin) 1/100 grain (0.6 mg.) parenterally. If the gas fails to pass through the tubes after this procedure, the uterus and tubes should be visualized by a radiopaque oil. This should be injected under fluoroscopic and pressure control. It is possible to see the uterus and tubes filling and to note the escape of oil from the ends. In any event, a roentgenogram should be made 24 hours later. If no oil is smeared amongst the pelvic viscera, the patient probably has tubal blockage; its location should be apparent in the roentgenograms made at the time of oil injection.

The surgical relief of tubal blockage is a specialized procedure that should be carried out by persons with an interest and training in sterility problems. The results obtained depend on the location of the obstruction, the extent of the tubal disease, the patient's age, and the fertility of her husband. Under ideal circumstances no more than one out of three patients subjected to salpingostomy conceives and has a baby. Various procedures have been devised to maintain patency of the tubes after they have been opened. In patients in whom the obstruction is at the uterine cornu, the tube may be severed from the uterus and implanted into the uterine cavity, through a new opening. Here a plastic tube inserted into the tube and uterine cavity is used to maintain patency. Although the results of tubal surgery have improved tremendously, patients should be selected carefully for these procedures.

X-RAY STERILIZATION OF OVARIES

To the Editor:—*My x-ray machine with the factors of 85 kvp, 25 ma., and 25 in. distance with a filtration equivalent to 1.5 mm. of aluminum gives 46 r per minute measured in air by a Victoreen meter. A roentgenogram of the pelvis is made with the same setup of factors but the exposure lasts 1½ seconds, thereby giving 1 1/6 r. How many pelvic roentgenograms such as this can be taken without exceeding the sterilization dose of the ovaries?*

M.D., California.

Answer.—There is no fixed value for the sterilization dose of the ovaries. A dose to the ovaries of 450 r given in one day or 600 r given over a period of two days will cause sterilization in most women. However, much smaller doses will produce sterilization in some women. Even smaller doses may not produce permanent sterilization, but result in amenorrhea of several months' duration. With the technical factors of the x-ray treatments outlined in the question, the number of roentgens reaching the ovary in an average-sized patient, per exposure, would be less than 0.4 r. It should be very difficult to produce permanent sterilization with x-rays of this quality. Severe skin reactions would be apparent before the sterilization dosage is reached. It should be added, however, that genetic damage, without sterilization, may result from very small doses of x-rays.

Answer.—The delivery of 400 r to the ovary in a single dose or a total of 1,000 r in a period of one week may be expected to produce sterilization in approximately 80% of cases. Under the conditions stated above, it is estimated that in a patient of average size the ovary would receive 0.25 r during the making of an x-ray film. This means that it would require the making of 1,600 pelvic films in a single day, or 4,000 films distributed over a week in order to deliver a dose that would accomplish sterilization in 80% of cases. Entirely aside from the matter of sterilization, there are excellent reasons for avoiding unnecessary radiation of any amount to any part of the body and particularly to the gonads.

WHISTLING NOISE OVER TEMPORAL AREA

To the Editor:—*I and some of my neurosurgical colleagues feel that a more accurate reply is required to the query on page 774 of* The Journal, *June 20, 1953, entitled, "Whistling Noise Over Temporal Area." The answer states, "The bruit alone would hardly be sufficient reason to make an angiogram or to consider any surgical treatment of this lesion." I take strong exception to this, as a bruit is one of the cardinal signs for an angiogram and prompt surgical intervention if it is possible. I say this because a bruit indicates a vascular fistula, which may rupture at any time and lead to a fatality. We also know that most arteriovenous fistulas or aneurysms tend to enlarge with time and may become inoperative by the time neurological abnormalities develop. I think you will find that almost every neurosurgeon today would agree that a bruit is definitely a reason for prompt cerebral angiography and surgical intervention if the lesion is in a suitable position for surgical treatment. May I conclude by saying how much I enjoy your section on Queries and Minor Notes.*

J. Lawrence Pool, M.D.
710 W. 168th St.
New York 32.

TETANUS

To the Editor:—*I would like to comment on the answer to the Query and Minor Note on tetanus in* The Journal, *Aug. 22, 1953, page 1677. The answer states "if the possibility of tetanus infection is present." Actually there is alw [illegible] sibility of tetanus infection, even from a scrat [illegible] this standpoint, in an active pediatric practice a pl [illegible] uld be giving antitoxin all the time. Therefore, I [illegible] ll my patients tetanus toxoid with booster doses every two to three years to keep up their basic immunity; in case of an injury a booster dose is given, which raises the titer rapidly. I still think tetanus antitoxin is unnecessary when a person has a proper antitoxic titer from his active immunization unless the injury is very severe. I believe active immunization is a lot safer than reliance on antitoxin. The prime reason for keeping up an active immunity is to obviate the necessity of giving either horse or bovine antitoxin and sensitizing the patient to serum.*

Douglas P. Arnold, M.D.
159 Bidwell Parkway
Buffalo, N. Y.

EXCRETA FROM TOILETS ON TRAINS

To the Editor:—*A student handed me a clipping from* The Journal *of July 18, 1953, because of a query with reference to excreta from toilets on trains. We have been interested in the problem in an academic way because we are at a loss to explain the incidence of the cyst stage of the beef tapeworm of man, which seems to be higher in this region than in the more western regions with which I am familiar. It would be difficult to ascribe this higher incidence to any peculiar customs of the farmers themselves. Actually the sanitary conditions and habits about the farms in New York seem to be much better than in many other areas of the country. When the many Sunday drivers, picnickers, and hunters find it necessary to defecate, they tend to seek the privacy of bushes, which reduces the possibility of cattle coming in contact with fecal matter. On the other hand, trains tend to run in valleys, and the flat land in those valleys is often used by the dairy industry. The cattle are pastured along the rights of way, and feed is cut from these meadow areas. The point of all this is that we should not overlook the railroad as a mechanism in the spread of Taenia saginata from man to cow.*

I think it is important to look at the problem, not from the standpoint of fecal contamination per track mile, but from the standpoint of probability of fecal contamination per specific mile. Passenger trains are not distributed at random throughout the United States; nor are their times of arrival and departure from the metropolitan areas a matter of chance. Generally the Pullman trains are scheduled to leave in the evening for arrival at their destination in the morning. Human habits being what they are, I would hazard a guess that passenger contamination of the tracks from Pullman cars is much more likely to take place in an area of say 50 miles outside of a metropolis.

Furthermore, it does not seem fair to place all the responsibility for track contamination on the passengers. Railroads have train crews and section gangs. I have ridden in at least one caboose that did not have a toilet. There are many railroads whose primary job is hauling freight and that carry few passengers. Including such lines in the statistics is apt to be misleading. If the railroads present any sanitary problem at all, it is apt to be localized near the large cities, because not only the contamination from the Pullman trains is greater but also the probability of commuter and employee contamination is increased.

In summary then, I would first suggest that any figures based merely on passenger traffic are apt to be deceptive. The employee contamination must also be considered. Secondly, the distribution of railroads and passengers is not random, so any average statistic is very suspect. It is highly probable there are areas of especially great contamination. Thirdly, in examining for areas of contamination, the beef tapeworm of man is a factor to consider.

D.V.M., New York.

VECTORCARDIOGRAPHY

To the Editor:—*In* The Journal, *Nov. 7, 1953, page 992, in answer to a question on vectorcardiography, it was said that an approximate frontal plane vectorcardiogram could be constructed from the three standard leads and the three aV leads. May I point out that in the third edition of my book, "Unipolar Lead Electrocardiography and Vectorcardiography" (Philadelphia, Lea & Febiger, 1953), I describe very simple methods by which frontal, horizontal, and sagittal plane vectorcardiograms can be constructed with great accuracy, using only two electrocardiograms, namely, leads I and aVF for the frontal plane vectorcardiogram, leads I and* V_1 *for the horizontal plane vectorcardiogram, and leads* V_1 *and aVF for the sagittal plane vectorcardiogram.*

Emanuel Goldberger, M.D.
111 E. 61st St.
New York 21.

TRICHOMONAS VAGINALIS

To the Editor:—*I have noted suggestions in Queries and Minor Notes for various types of treatment of Trichomonas vaginitis. None of these have mentioned the use of copper sulfate. I have found that one douche of copper sulfate, using 1 to 2 gm. to a liter of water, will relieve all symptoms; if the douche is repeated daily for several weeks, permanent cure will result in most cases. This simple method, in my experience, has been the best treatment for this condition.*

H. M. Purcell, M.D.
550 W. Thomas Rd.
Phoenix, Ariz.

BURNING PAIN IN FOOT

To the Editor:—*In* The Journal, *Oct. 17, page 693, is a query about "burning pain in foot." I find this symptom present in early osteoarthritis, and generally treatment with 2.5 to 4 gm. of sodium salicylate gives relief. In patients that do not respond to sodium salicylate, I have found that 50 mg. of tripelennamine (Pyribenzamine) or a similar antihistaminic given three or four times a day has given relief. These simple measures can be used for patients of any age.*

Charles R. Svoboda, M.D.
Chapman, Kan.

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POOLED PLASMA WITH LITTLE OR NO RISK OF HOMOLOGOUS SERUM JAUNDICE

J. Garrott Allen, M.D., Daniel M. Enerson, M.D., E. S. G. Barron, M.D.
and
Carolyn Sykes, R.N., Chicago

Pooled plasma can be prepared with little or no risk of homologous serum jaundice if certain practices now employed in its preparation are discontinued. The high attack rate of homologous serum jaundice among plasma recipients is a function of certain self-evident errors introduced by the methods chosen for plasma storage. When pooled plasma is dried, frozen, or refrigerated, homologous serum jaundice develops in from 5 to 22% of the recipients receiving transfusion. If a contaminated plasma pool is lyophilized (dried), frozen, or refrigerated, the activity of its virus is preserved indefinitely.[1] The source of virus contamination in a pool of plasma is the occasional unit of plasma derived from a donor who is a carrier of the virus. The carrier donor cannot be excluded by a history negative for hepatitis or jaundice or by laboratory tests. Therefore, all pools of plasma stored under conditions favorable to virus survival are potentially hazardous.

The virus of homologous serum jaundice in pooled plasma that has been stored in a liquid state at room temperature for six months becomes attenuated and seldom if ever transmits the disease.[2] Most viruses do not survive long when stored in a liquid cell-free medium at room temperature.[3] Virologists carefully avoid exposing viruses to such conditions when they desire to perpetuate virus activity. Had the biological principles governing virus survival been heeded, lyophilized, frozen, or refrigerated pooled plasma would not have been used until it could be demonstrated to be free of virus activity. Lyophilizing and freezing, which offer the best chance for survival of most viruses, are the methods most frequently employed for the storage of plasma. It should not be surprising that the virus of homologous serum jaundice has been preserved in lyophilized and frozen pooled plasma, which so frequently transmits the disease.

Room temperature storage of liquid plasma, however, has not been considered feasible, because it was assumed that the proteins of plasma would under serious deterioration. This assumption has jected to laboratory scrutiny other than the by Lozner and Newhouser,[4] who observed only chemical changes in liquid plasma stored for three yea

In this paper is summarized an 11 year clinical experience with pooled plasma stored in liquid form at room temperature for six months or longer before use. No cases of homologous serum jaundice were known to develop when this was the only product administered. In addition, clinical and chemical data are presented. The chemical changes that occur in liquid plasma stored at room temperature do not appear to effect materially the usefulness of liquid plasma stored for reasonable periods of time.

CLINICAL EXPERIENCE

In table 1 are data relative to the incidence of homologous serum jaundice resulting from the administration of whole blood alone, from blood plus pooled liquid plasma, and from liquid pooled plasma alone. It will be noted that no homologous serum jaundice occurred in the group of patients receiving only the liquid pooled plasma stored at room temperature. During the same period 44 cases of homologous serum jaundice developed in the groups receiving whole blood alone or blood in combination with the plasma stored at room temperature. The incidence of homologous serum jaundice in the group of

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From the Department of Surgery, University of Chicago.

[1] Murphy, W. P., Jr., and Workman, W. G.: Serum Hepatitis from Pooled Irradiated Dried Plasma, J. A. M. A. **152**: 1421 (Aug. 8) 1953. Straus, B., and Torres, J. M.: Use and Abuse of Blood Transfusion, ibid. **151**: 699 (Feb. 28) 1953. Albrecht, R. M., and others: Serum Hepatitis Apparently Acquired from Irradiated Plasma, ibid. **152**: 1423 (Aug. 8) 1953. Allen, J. G., and others: Homologous Serum Jaundice and Its Relation to Methods of Plasma Storage, ibid. **144**: 1069 (Nov. 25) 1950.

[2] (*a*) Allen, J. G.: Problems of Homologous Serum Jaundice After Plasma Transfusion, A. M. A. Arch. Surg. **64**: 1 (Jan.) 1952. (*b*) Allen, J. G.: Pooled Plasma and Homologous Serum Jaundice, Maryland M. J. **1**: 540, 1952. (*c*) Allen, J. G.; Inouye, H. S., and Sykes, C.: Homologous Serum Jaundice and Pooled Plasma: Attenuating Effect of Room Temperature Storage on Its Virus, Ann. Surg. **138**: 476 (Sept.) 1953.

[3] Topley, W. W. C., and Wilson, G. S.: Topley and Wilson's *Principles of Bacteriology and Immunity*, revised by G. S. Wilson and A. A. Miles, ed. 3, Baltimore, Williams & Wilkins Company, 1946. van Rooyen, C. E., and Rhodes, A. J.: Virus Diseases of Man, New York, Thos. Nelson & Sons, 1948. Viral and Rickettsial Infections of Man, edited by T. M. River, New York, J. B. Lippincott Company, 1948. Seiffert, G.: Virus Diseases in Man, Animal and Plant, New York, Philosophical Library, Inc., 1944.

[4] Lozner, E. L., and Newhouser, L. R.: Preparation of Normal Human Plasma in the Liquid State, J. Clin. Invest. **23**: 343, 1944.

patients receiving blood alone was substantially the same as that for those receiving blood plus liquid plasma stored six months before use. In none of the 54 patients *given the remaining units* from these five plasma pools did homologous serum jaundice develop. From these and other data [2c] it is concluded that homologous serum jaundice in the group receiving blood plus plasma was due to the blood they received rather than to plasma.

All patients in table 1 were observed for six months or longer in the University of Chicago Clinics after their last transfusion. The yearly reaction rate has been recorded month by month for liquid plasma and for blood during this same 11 year period. For plasma it averaged 0.53% of units given, and for blood it was 1.9% per total transfusions administered. These data were obtained from two sources: by "chart rounds" and interviews with patients receiving transfusion and while still in the hospital and by reports to the blood bank by the floor nurses and the medical staff. Most reactions were detected by the "chart rounds" procedure. No deaths occurred in the plasma group. Three occurred after transfusions with whole blood. Although most of the plasma administered during this time was given for the correction of hypoproteinemia in patients unable to eat,[5] it was also given for the treatment of wounds, burns, and/or hemorrhagic shock, where it proved as effective as other types of plasma in the treatment of these shock states.

TABLE 1.—*Incidence of Jaundice According to Type of Transfusion, 1942-1953**

Transfusion	No. of Units Used	No. of Patients Receiving Transfusion	No. of Cases of Homologous Serum Jaundice	Average Donor Exposure †
Blood only	37,026	10,610	39	3.5
Plasma only	1,546	315	0	52.2
Blood and plasma				
Blood	5,203	1,045	5	5.0
Plasma	6,124			44.6
Total	49,899	11,970	44	...

* Total units of blood pooled and administered as plasma, 19,524.
† Average number of donors to whom any one patient was exposed.

All plasma was prepared from outdated citrated whole blood between the fifth and eighth days after drawing. ACD (anticoagulant acid citrate dextrose) solution was not used, and no antiseptics or antibiotics were employed. Separation from the erythrocyte mass was by sedimentation rather than by centrifugation. All pools of plasma were cultured for both aerobic and anaerobic bacteria; 4% of all pools were found to be contaminated. A pool consisted of from 25 to 32 donors and was limited by the 6 liter capacity of the Pyrex container used. All donors were questioned regarding a history of jaundice or hepatitis. No donor with a history of either complaint was knowingly allowed to give blood.

SURVEY DATA FROM OTHER BLOOD BANKS

In table 2 is listed the experience of other blood banks with reference to the types of pooled plasmas used and the number of patients in whom homologous serum jaundice is known to have developed. These data were compiled from a recent questionnaire circulated by the American Association of Blood Banks and from published reports.

Of note is the fact that all of the cases of homologous serum jaundice occurred as a result of only 13% of the plasma given. This 13% was comprised of pooled plasma that had been dried, frozen, or refrigerated. The remaining 87%, or 191,887 units, of pooled plasma had been stored at room temperature in a liquid state for three to nine months before administration. No cases of homologous serum jaundice were reported for this group. At the same time, these same blood banks reported 544 cases of homologous serum jaundice from the administration of 1,248,439 units of blood. Sixty-two of the blood banks reporting had used all four methods of plasma storage. Thirty were using no plasma.

TABLE 2.—*Questionnaire Data from 124 Blood Banks*

Pooled Plasma	Units	Known Cases Homologous Serum Jaundice	% of Total Plasma Used	Total Cases Homologous Serum Jaundice
1. Dried	23,041	236	13%	259
2. Frozen	775	2		
3. Refrigerated	1,431	21		
4. Liquid room temperature stored	191,887	0	87%	0
5. Blood transfusions	1,248,439			544

CHEMICAL STUDIES

Listed in table 3 are data from analyses of certain plasma constituents on plasma samples ranging in age from 2 months to 10½ years. The total protein content for each plasma pool varied to some extent and in accordance with the number of donors contributing to any one pool. In some instances, less than 500 cc. of blood was obtained from a given patient, yet the 75 cc. of citrate solution remained constant. Therefore, when several "short" bloods were added in a plasma pool, the resulting plasma was diluted more than usual by the constant citrate volume.

TABLE 3.—*Protein Content of Pooled Plasma Stored at Room Temperature for Varying Periods*

Period of Storage, Yr.	Sample No.	Total Protein Concentration, Gm. per 100 Cc.	Percentages of Total Proteins Expressed as Percentage of Total Protein Concentration *					
			Albumin	Alpha Globulin			Beta Globulin	Gamma Globulin
				L_1	L_2	L_3		
10 9/12	1	5.95	57.2	10.6	14.3	...	9.2	8.8
10	2	5.52	57.8	8.0	15.6	...	10.3	8.3
7	3	5.88	57.6	9.7	10.6	3.6	7.6	10.9
6	4	5.97	59.9	9.3	12.6	...	9.3	8.9
2 9/12	5	6.22	48.1	10.2	12.1	...	14.1	15.6
2	6	6.76	42.5	10.1	12.2	...	18.3	16.9
1 9/12	7	6.28	50.4	10.1	11.4	...	13.6	14.5
1 6/12	8	6.08	54.6	6.9	5.3	9.1	13.4	10.7
1 3/12	9	5.49	46.7	9.1	13.0	...	17.4	13.8
1	10	6.39	50.4	8.4	11.5	...	18.1	11.5
9/12	11	5.72	50.8	6.4	13.8	...	16.3	12.8
4/12	12	6.71	48.0	9.7	11.2	...	15.7	15.4
2/12	13	6.28	49.7	4.9	8.7	8.0	17.0	11.8

* Calculated from electrophoretic patterns.

The changes in the percentages of the various protein fractions are shown in table 4. In general, a slight increase in albumin concentration slowly developed over the 10½ year period. Proportionately, the alpha globulin increased to a greater extent. Both beta and gamma globulin, however, decreased about 50 and 25% respectively after 10½ years, but there was little detectable change short of 2½ years. Since the beta and gamma fractions are large protein molecules and normally exert less effect on osmotic pressure, their deterioration was found to have no remarkable influence on the osmotic pressure potential. The protein changes did not appear until after 24 months, and they appear to explain the accentuation of the electrophoretic peak associated with the albumin peak in the older plasma. The most pronounced changes occurred between the 30th and 60th months, after which little change was detected through the 126th month (10½ years).

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[5] Enerson, D. M., and Allen, J. G.: Homologous Serum Jaundice in Pooled Liquid Plasma Stored at Room Temperature, A. M. A. Arch. Surg., to be published.

In table 5 are summarized the data computed from electrophorectic studies as related to Kjeldahl values. Here again the changes in protein values appear similar to those reported by Lozner and Newhouser [4] after three years of plasma storage at room temperature. It will be noted as the age of plasma increased beyond three years, the changes in the globulin become more pronounced.

becomes bulky. It is readily removed by the usual filters used in blood administration sets. A thin, powder-like white sediment also appears at the bottom of the bottles of liquid plasma and remains permanently. It is harmless and does not impair in any manner the administration of such plasma. Some, who are unaccustomed to liquid plasma, are disturbed by the variations in color different lots of liquid assume. Colors range from a golden yellow to an opalescent green; these colors are best seen in the large pools but are scarcely noticeable in the smaller 500 cc. units. The final product remains transparent, however, except for the thin gel and for the small amount of white precipitate which is resuspended when agitated. None of the emulsion properties of reconstituted dried plasma are seen.

In the figure is shown the plasma protein response to administration of three types of plasma to three hypoproteinemic patients. These three types of plasma were: liquid plasma stored at room temperature and aged six months before administration, liquid plasma stored at room temperature and aged three years before administration, and reconstituted dried plasma. The increase in protein concentration in these three patients was similar and the clinical improvement comparable. In the case of the patient receiving the dried plasma, however, homologous serum jaundice developed four months later. No other detectable difference was evident.

TABLE 4.—*Electrophoresis Results**

Period of Storage, Yr.	Sample No.	Total, Gm. per 100 Cc.	Albumin		Globulins									
					Alpha Globulin									
					L1		L2		L3		Beta Globulin		Gamma Globulin	
			%	Gm. per 100 Cc.	%	Gm. per 100 Cc.	%	Gm. per 100 Cc.	%	Gm. per 100 Cc.	%	Gm. per 100 Cc.	%	Gm. per 100 Cc.
10 6/12	1	5.95	57.2	3.40	10.6	0.63	14.3	0.85	...	....	9.2	0.55	8.8	0.52
10	2	5.52	52.6	2.90	8.0	0.44	16.0	0.88	...	....	9.2	0.51	14.3	0.79
			57.8	3.19	8.0	0.44	15.6	0.86	...	....	10.3	0.57	8.3	0.46
7	3	5.88	57.6	3.39	9.7	0.57	10.6	0.62	3.6	0.21	7.6	0.45	10.9	0.64
6	4	5.97	59.9	3.58	9.3	0.56	12.6	0.75	...	....	9.3	0.56	8.9	0.53
2 6/12	5	6.22	48.1	2.98	10.2	0.63	12.1	0.75	...	....	14.1	0.88	15.6	0.97
2	6	6.76	42.5	2.87	10.1	0.68	12.2	0.83	...	....	18.3	1.24	16.9	1.14
1 9/12	7	6.28	50.4	3.27	10.1	0.45	11.4	0.74	...	....	13.6	0.88	14.5	0.94
1 6/12	8	6.08	54.6	3.32	6.9	0.42	5.3	0.32	9.1	0.56	13.4	0.49	10.7	0.65
1 3/12	9	5.49	46.7	2.57	9.1	0.49	13.0	0.72	...	....	17.4	0.96	13.8	0.76
1	10	6.39	50.4	3.22	8.4	0.54	11.5	0.73	...	....	18.1	0.80	11.5	0.73
9/12	11	5.72	50.8	2.90	6.4	0.37	13.8	0.79	...	....	16.3	0.64	12.8	0.73
4/12	12	6.71	48.0	3.22	9.7	0.65	11.2	0.75	...	....	15.7	0.62	15.4	1.03
2/12	13	6.28	49.7	3.12	4.9	0.31	8.7	0.55	8.0	0.50	17.0	0.54	11.8	0.74

* Values expressed as percentage of total protein concentration (obtained by Kjeldahl analyses of fractions).

The amino nitrogen continued to increase without interruption and at a fairly constant rate throughout the entire storage period, as demonstrated in table 4. This indicates a slow breakdown of protein. The increase of amino nitrogen was from 2.11 mg. per 100 mg. of total nitrogen to 6.62 mg. per 100 mg. of total nitrogen.

The most labile of the plasma protein constituents appeared to be the clotting components. Prothrombin activity and fibrinogen disappear. Measurements of accelerator globulin and the antihemophilic globulin were not made, as both of these substances are known to deteriorate. Since plasma is used for the treatment of shock and not for treatment of abnormal bleeding, loss of its clotting properties is considered clinically unimportant.

In addition, there are two changes in the gross appearance of liquid plasma stored at room temperature that should be mentioned but that have proved of no clinical importance. Beginning from 2 to 12 months after the storage period is instituted, a gel appears that redissolves or lyses between the 18th and 36th month. This, in part at least, is fibrin-like. It is usually a fragile gel and seldom

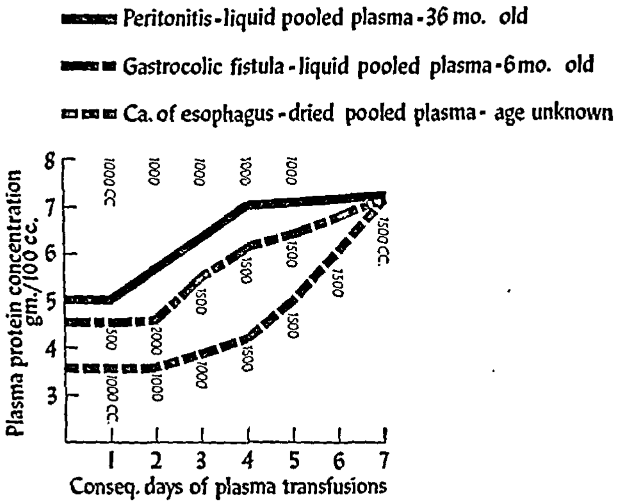
TABLE 5.—*Free Amino Acid Content of Same Pool Plasma Samples Stored at Room Temperature for Varying Periods*

Period of Storage, Yr.	Sample No.	Total Nitrogen, Mg. per 100 Cc.	Amino Nitrogen, Mg. per 100 Cc.	Amino Nitrogen in 100 Mg. of Nitrogen
10 9/12	1	952	63.0	6.62
10	2	884	54.0	6.11
7	3	942	46.7	4.96
6	4	956	38.9	4.07
2 9/12	5	997	34.8	3.49
2	6	1,080	35.8	3.31
1 9/12	7	1,037	30.8	2.92
1 6/12	8	973	31.4	3.22
1 3/12	9	880	34.1	3.88
1	10	1,021	32.4	3.17
9/12	11	916	28.9	3.15
4/12	12	1,073	21.8	2.03
2/12	13	997	21.0	2.11

COMMENT

Tables 1 and 2 establish the fact that there is little, if any, risk of homologous serum jaundice in the administration of pooled plasma after it has been stored at room temperature for six months prior to administration, providing the donors were healthy and met the National Institutes of Health requirements at the time they made their donation. The data presented in table 2 obviously represent but a small proportion of the number of patients in whom homologous serum jaundice developed after the administration of blood and/or plasma. The blood banks reporting their data acknowledged this defect. Since no cases of homologous serum jaundice developed in the patients receiving liquid plasma stored at room temperature, any assumed greater attack rate will increase the attack rate for dried, frozen, or refrigerated plasma without affecting the attack rate for liquid plasma. As yet, no data have been published that provide a rational basis to question the safety of liquid plasma.

If, however, the donor requirements of the National Institutes of Health are set aside and pools of plasma are deliberately contaminated with plasma drawn from patients sick with homologous serum jaundice at the time of their donations, a period slightly longer than six months appears necessary to render this highly virulent product free of risk of homologous serum jaundice. Attesting this conclusion are the human volunteers of Murray and co-workers,[6] who were inoculated with pooled plasma intentionally contaminated by plasma from donors sick with homologous serum jaundice when their blood was withdrawn. For this plasma, so highly contaminated, the attack rate was 52%. This was not changed by three months' storage at room temperature; however, after six months this highly virulent plasma nearly lost its infectivity. Its attack rate was reduced from 52% to 5%. Of 20 volunteers given this material, in only one did homologous serum jaundice develop. The disease in this patient was unique in that the incubation period was 196 days, which is the longest on record and which is further evidence of the mild residual virulence. The attack also was mild. It is not surprising that a pool of plasma contaminated with so highly virulent a virus should require a slightly longer storage period to abolish its virus activity than when the virus is the usual "carrier" type. It is clear that a little longer storage would "sterilize" completely this intentionally contaminated plasma.



Plasma protein response to administration of three types of plasma to three patients with hypoproteinemia.

Studies of the physiochemical and biochemical aspects of citrated liquid pooled plasma stored for a few months to 10½ years indicate its stability. The results herein reported were also independently duplicated in 1952 by Chanutin at the University of Virginia. His studies on our plasma were performed at the request of the National Research Council. According to Chanutin,[7] "Aged plasma collected in citrate (without A.C.D.) showed comparatively small changes in the electrophoretic pattern" when stored for six months to eight years. These minor changes affect the larger protein molecules, principally the globulins, and as first described by Lozner [4] in 1944 result in a plasma that has a greater osmotic pressure after three years of standing than it originally possessed. The stability of pooled citrated plasma permits its storage in a liquid state at room temperature for at least three years without interference with its clinical usefulness. Clinical data are not available for plasma stored for greater periods of time.

Because of its stability and safety, the storage of pooled liquid plasma at room temperature for six months or longer becomes an inexpensive and practical means of inactivating the virus of homologous serum jaundice. Thereafter this plasma can be lyophilized without difficulty if it is desired to store the product indefinitely. The clotting factors, however, are lost too rapidly at room temperature storage to be useful in the treatment of disorders of coagulation. This is not objectionable, since fresh plasma is of little benefit in the treatment of abnormal bleeding disorders other than hemophilia. Prothrombin in dried plasma deteriorates on standing although much more slowly than in liquid plasma. Coagulation disorders that respond to plasma components are best treated by the administration of appropriate plasma fractions rather than by the administration of the intact product. To date, this appears to be one of the reasons why some plasma should be fractionated. While the plasma fractions have proved invaluable as a tool for research and have been very useful in certain limited clinical fields, it should be recognized that the current fractionated procedure reclaims little more than half of the available serum albumin and a much smaller percentage of transfusable globulin proteins. This extravagance of protein is acceptable for reclaiming contaminated plasma and placental blood that otherwise would be lost, but this loss becomes intolerable indeed in planning for the efficient use of plasma for national defense or for meeting the needs of the community hospital. The usefulness of pooled plasma is so great and its cost is so little that we can ill afford to throw it away.

SUMMARY

The storage of pooled plasma in a liquid state for six months at room temperature carries no demonstrated risk of homologous serum jaundice, provided donor selection excludes those with history of hepatitis or jaundice in accordance with the standards set up by the National Institutes of Health. The room temperature storage procedure appears suitable to eradicate even the virus activity of pooled plasma intentionally contaminated with the highly virulent plasma obtained from donors who have homologous serum jaundice when their blood is withdrawn. If the National Institutes of Health donor standards are to be ignored to this extent, a period of storage a little longer than six months may be necessary to offset the unusual virulence encountered in such plasma.

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[6] Murray, R.: The Problem of Reducing the Danger of Serum Hepatitis from Blood and Blood Products, Chicago, American Association of Blood Banks, October, 1953.

[7] Chanutin, A.: Personal communication to the author, October, 1953.

Chemical studies of liquid pooled plasma show no clinically significant alteration after room temperature storage for 30 months. Clinical studies reveal this plasma to be as useful in the prevention or treatment of shock or hypoproteinemia as freshly prepared liquid or dried plasma. After six months to nine months of room temperature storage, when its virus activity has died out, liquid plasma can be lyophilized if desired. While storage of liquid pooled plasma for six months at room temperature provides a safe, simple, and inexpensive means for the preparation of plasma, this procedure is not adaptable to whole blood.

TREATMENT OF ACUTE MYOCARDIAL INFARCTION WITH PARTICULAR REFERENCE TO SHOCK

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Acute myocardial infarction is the cardiac emergency that most frequently confronts the physician. The pathophysiological mechanism may be coronary thrombosis, acute coronary occlusion, or prolonged ischemia in the absence of coronary closure.[1] Since the myocardial infarct is the pathological lesion responsible for the clinical syndrome, and since the presence, absence, or exact character of the arterial occlusion cannot be diagnosed clinically, it is more accurate to use the term "acute myocardial infarction" rather than alternative designations such as coronary thrombosis, coronary occlusion, or coronary insufficiency. Regardless of the causal mechanism, the general principles underlying the treatment of acute myocardial infarction are essentially the same. The aims of treatment are to provide optimum rest of the patient's heart in order to promote healing of the infarct and to prevent further damage by protecting the patient and his heart from undue strain until a firm scar has been established and adequate collateral circulation has had an opportunity to develop. The sequence of pathological changes that occur in the heart have been clearly delineated and are an invaluable orientation in clinical management. During the first week after acute myocardial infarction, dissolution of muscle fibers with invasion of polymorphonuclear leukocytes dominates the scene. During the second week this process continues and fibroblastic activity is first seen. Connective tissue formation continues, with the establishment of a firm scar by the end of six weeks. Collagen is first deposited in the second week and is not complete until approximately three to four months after acute myocardial infarction.[2] The available evidence indicates that intercoronary collateral channels develop within 10 days and progressively increase.

Complete rest, physical and mental, is essential, particularly during the first two weeks, when the muscle wall is weakest and ventricular rupture is most likely to occur.[3] For most patients one month of full rest and one month of gradually increasing activity and, when possible, a third month of continued convalescence before undertaking work are advisable. As P. D. White has cogently stated, "During the last two decades the pendulum has swung from one extreme to the other with respect to the length of time at full rest and of total convalescence from two or three months of the former and six months to a year of the latter to a few days only at rest and a few weeks only away from work. The wisest course is doubtless to avoid both these extremes." [4] As in all matters of treatment, the general plan will be modified by the physician in the light of common sense and sound judgment in evaluating the size of the infarct, the presence or absence of congestive failure or other complications, the personality of the patient, and the social and economic environmental factors. Manifestly, the tense hyperactive patient rebellious against his condition and enforced confinement may secure more actual rest with a more lenient regimen.

RELIEF OF PAIN

Pain should be promptly relieved by the use of morphine sulfate or meperidine (Demerol). Fifteen milligrams should be given subcutaneously at half hour intervals until the desired effect is attained. The total dose should not exceed 65 mg. The effect of each dose should be carefully observed before administering the next dose. If the pain is intense, 30 mg. should be given hypodermically at once. If the situation is critical, slow intravenous injection of 15 mg. is advisable. If an idiosyncrasy to morphine and related compounds is present, meperidine, in doses of 75 to 100 mg., or one of the

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[1] Blumgart, H. L.; Schlesinger, M. J., and Zoll, P. M.: Angina Pectoris, Coronary Failure and Acute Myocardial Infarction: The Role of Coronary Occlusions and Collateral Circulation, J. A. M. A. 116:91 (Jan. 11) 1941.

[2] Mallory, G. K.; White, P. D., and Salcedo-Salgar, J.: Speed of Healing of Myocardial Infarction: Study of Pathologic Anatomy in 72 Cases, Am. Heart J. 18:647, 1939.

[3] Wessler, S.; Zoll, P. M., and Schlesinger, M. J.: The Pathogenesis of Spontaneous Cardiac Rupture, Circulation 6:334, 1952.

[4] White, P. D.: Heart Disease, ed. 4, New York, the Macmillan Company, 1951, p. 562.

newer preparations such as methadone in doses of 15 mg. may be administered by mouth or subcutaneously. For minor discomfort codeine may suffice. If the patient is restless, phenobarbital in 15 or 30 mg. doses three or four times a day, or one of the other barbiturates may be used, making the use of stronger narcotics unnecessary.

Recurrent pain must be regarded as a sign of continuing myocardial ischemia and necrosis. Such additional necrosis for days after initial infarction is common in patients who fail to survive and is a major complication. Rest and oxygen therapy are important in the effort to limit the amount of infarcted muscle. Oxygen therapy is indicated in all moderate or severe cases, always when the pain is resistant to other measures, and whenever cyanosis is present. Dyspnea is relieved, pain is lessened, the heart rate is slowed, and not infrequently the patient lapses into quiet, restful sleep. Aminophylline (theophylline ethylenediamine), 0.48 gm., or papaverine hydrochloride, 0.03 to 0.09 gm., administered by slow intravenous injection, has been recommended when pain is not relieved by the previously mentioned methods.

THERAPY

Digitalis should be administered to all patients with evidences of congestive failure or with rapid ventricular rates due to auricular fibrillation or auricular flutter. If the patient has had no prior digitalis medication, moderately rapid digitalization can be accomplished by 0.6 mg. of digitoxin orally, followed by 0.2 mg. every four or six hours, until the desired effect is obtained. Occasionally, when rapid emergency digitalization is necessary, lanatoside C, 0.8 mg. followed by 0.2 to 0.4 gm. every two hours as indicated, or even a single digitalizing dose of 1.6 mg. may be given. It is excreted within 72 hours. The daily oral maintenance dose is 0.5 to 1.0 mg. In the absence of the above definite indications, it is unwise to use digitalis because of the possible induction of arrhythmias or gastrointestinal symptoms. In the presence of congestive failure, procaine penicillin G, 300,000 units once daily, or one of the other long-acting preparations should be used to prevent pulmonary infection. Mercurial diuretics such as mercaptomerin (Thiomerin) in doses of 1 or 2 cc. and restriction of salt may be used to control mild congestive failure and may render digitalization unnecessary.

Quinidine sulfate has been routinely advised to minimize the possible development of paroxysmal tachycardia or fibrillation. The drug is not without occasional adverse effects, such as nausea, vomiting, or diarrhea. In moderate dosage this drug may also cause a fall in blood pressure in some patients with acute myocardial infarction. The routine use of quinidine is, therefore, not advisable. In the presence of extrasystoles, however, its administration should be attempted in doses of 0.2 to 0.4 gm. every three or four hours. If gastrointestinal symptoms are induced, enteric coated preparations may be used or paregoric may be given to control cramps and diarrhea. Procaine amide hydrochloride is also effective in the treatment of extrasystoles, particularly ventricular premature contractions, in doses of 0.25 to 0.5 gm. by mouth at four to six hour intervals. In the treatment of paroxysmal ventricular tachycardia an initial dose of 1 gm. followed by 0.25 to 0.5 gm. orally at four to six hour intervals is usually adequate; 0.7 to 1.0 gm. may be administered intramuscularly. In critical situations slow intravenous injection of 250 to 1,000 mg. at a rate not greater than 100 mg. per minute may be necessary. During intravenous administration unpredictable hypotension and death may occur. Repeated observations of blood pressure and electrocardiographic tracings should be made and a vasopressor agent such as arterenol should be immediately available. Glyceryl trinitrate (nitroglycerin) is hazardous in the acute phase of acute myocardial infarction and should not be used. If the patient is first seen in his initial attack of cardiac pain, this drug should not be administered until the possibility of acute myocardial infarct has been excluded. In the presence of fresh coronary occlusion, administration of glyceryl trinitrate may lead to a fall in blood pressure and precipitate massive infarction or death.

A low caloric intake of approximately 1,000 calories and consisting of readily ingestible and digestible foods is indicated during the first two or three days. Fruit juices, milk, ginger ale, ice cream, custards, eggs, and toast may be given. Fluids sufficient to produce a daily urinary output of 1,500 cc. and restriction of salt to 2 gm. or less daily are indicated. The bowels may be neglected at the onset, but one of the heavier mineral oils or emulsified preparations should be prescribed in 30 cc. doses once or twice daily to avoid the discomfort of constipation and abdominal distention. If constipation requires treatment, a glycerin suppository or a retention enema of 90 cc. of plain mineral oil may be administered in the evening. If cathartics later prove necessary, one of the milder saline laxatives is preferable. Straining at stool must be avoided. The use of a commode entails less effort than the use of a bed pan and should be employed unless the patient is too critically ill to be transported or the patient utilizes a bed pan without undue strain or discomfort. The bed pan may be used at the edge of the bed with the patient resting his feet over the side of the bed on a chair. Anticoagulant therapy, consisting of bishydroxycoumarin (Dicumarol) or allied drugs, alone or in combination with heparin, has been shown by Wright,[5] Allen,[6] and others to diminish the incidence of thromboembolic complications and to lower the mortality rate. Without a full knowledge of the pharmacological characteristics, contraindications, and inherent dangers of these drugs, and unless reliable laboratory measurements are available, their use is hazardous and should be avoided. These drugs are contraindicated in the presence of serious hepatic or renal disease, peptic ulcer, ulcerative colitis, any of the hemorrhagic blood diseases, and other states such as recent cerebral hemorrhage when an intact hemostatic mechanism may be vital. In recent years strong evidence has been brought forward[6] that anticoagulant therapy is unnecessary in "good risk" patients. Included in this group are patients who, when first seen, appear on the basis of history and symptoms to have a small and not severe lesion, and those who are having their first attack and do not manifest arrhythmias, congestive failure, thrombotic complications, or evidence of shock. Bishydroxycoumarin is administered orally. The first day 200-300 mg. is usually administered. A single dose of bishydroxycoumarin requires 24 to 48 hours to attain its maximum effect; therefore subsequent dosage is gaged each day after the daily prothrombin report is available. The second day, 200 mg. is usually given and 50 to 100 mg. on subsequent days to maintain the prothrombin time at approximately 30 seconds, corresponding to 10% of normal. When the prothrombin time is 30 to 35 seconds, the drug is omitted for the day. Anticoagulant therapy usually is maintained for 21 to 28 days. If pericarditis occurs, anticoagulant therapy should be stopped. Constant vigilance must be exercised for hemorrhagic phenomena, including microscopic or gross hematuria or blood in the stools. Similar caution must be observed with other anticoagulants such as ethyl biscoumacetate (Tromexan) and phenindione.

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[5] Wright, I. S.; Marple, C. D., and Beck, D. F.: Anticoagulant Therapy of Coronary Thrombosis with Myocardial Infarction, J. A. M. A. **138**: 1074 (Dec. 11) 1948.

[6] Allen, E. V.; Barker, N. W., and Waugh, J. M.: A Preparation from Spoiled Sweet Clover [3, 3' Methylene-Bis-(4-Hydroxycoumarin)] Which Prolongs Coagulation and Prothrombin Time of the Blood: A Clinical Study, J. A. M. A. **120**: 1009 (Nov. 28) 1942. Russek, H. I.; Zohman, B. L.; White, L. G., and Doerner, A. A.: Indications for Bishydroxycoumarin (Dicumarol) in Acute Myocardial Infarction, J. A. M. A. **145**: 390 (Feb. 10) 1951.

Heparin has been recommended in doses of 75 mg. every four hours or by constant intravenous drip during the first 24 to 48 hours until the action of bishydroxycoumarin becomes manifest, particularly if the patient is first seen several days after the onset. The use of elastic stockings, passive movements of the legs, turning the patient, and having him take deep breaths to prevent stasis of blood and expand the lungs are important adjuncts in treatment.

TREATMENT OF CERTAIN COMPLICATIONS

Shock is a frequent and dangerous complication. Cold, clammy perspiration, grey cyanosis, weakness, faintness, a lowered blood pressure, thready pulse with pulse pressure of less than 25 mm. Hg, nausea, and occasionally vomiting are the important manifestations. The fall in blood pressure is the cardinal sign. The cardiac rate is almost always rapid, but bradycardia is occasionally observed. Shock generally follows the pain of acute myocardial infarction immediately or after many hours or days. The mortality of those patients who manifest severe shock has been stated to be 80%, but with modern treatment the mortality can be significantly decreased. A fall in blood pressure does not of itself constitute shock unless other clinical manifestations above noted are present. Indeed, an occasional patient after acute myocardial infarction with systolic blood pressures of 80 to 90 mm. Hg may have warm extremities, be comfortable, and recover uneventfully. Since our understanding of the pathological physiology of shock is incomplete and cardiopulmonary reflex factors, as well as reduced output and peripheral vasomotor collapse, are implicated, the program of treatment is in part empirical and in part aimed at correcting some of the major pathophysiological abnormalities. The two main derangements are the lowered cardiac output and the peripheral vascular collapse with reduced venous return, each tending further to perpetuate and accentuate the other.[7] Depending on the degree and duration of shock, secondary metabolic and morphological consequences in practically all the organs of the body, including the heart itself,[7a] are prone to occur.

Application of elastic bandages to the legs from ankle to midthigh may be of value. Elevation of the foot of the bed has been recommended but is rarely practicable or advisable, as congestive failure is frequently present and the position is not tolerated by these dyspneic, apprehensive patients. Continuous administration of oxygen in concentrations of 50 to 90%, with use of a face mask or an oxygen tent, is indicated. If the patient is restless, anxious, or suffering pain, meperidine, 50 or 75 mg. parenterally, to be repeated if necessary at half or one hour intervals, is indicated. Morphine sulfate should be used only in the presence of great pain. The foregoing measures may suffice in the treatment of shock.[7b] In fact, some patients recover spontaneously from mild or even moderate shock. Moderate to severe shock, however, with systolic blood pressures below 80 mm. Hg may become irreversible or refractory to all methods of treatment within an hour. Energetic treatment with vasopressor drugs, plasma, or whole blood is more likely to achieve favorable results the earlier it is begun. Procrastination is perilous.

If the patient is dehydrated and the peripheral venous pressure is low, as shown by collapsed veins, intravenous infusion of 5% dextrose in isotonic sodium chloride is indicated with the administration of vasopressor drugs, particularly after profuse perspiration or vomiting. In the presence of anemia, transfusions of blood in amounts of 200 to 250 cc. should be given in refractory situations and repeated as necessary to maintain a systolic blood pressure at or above 100 mm. Hg; careful observation of signs of pulmonary edema or rise in peripheral venous pressure must be made. When peripheral vascular collapse and normal hemoglobin values are present, plasma rather than blood should be used. Intra-arterial transfusions have been recommended, but their superiority to the regimen outlined here has not been demonstrated.

The clinical usefulness of vasopressor drugs in combating shock in acute myocardial infarction has become increasingly apparent. In contrast to epinephrine some of these preparations, such as *l*-arterenol, do not increase the cardiac output, do not produce tachycardia or affect cardiac irritability, but nevertheless cause marked peripheral vasoconstriction and restoration of more normal blood pressure levels. Methoxamine and mephentermine (Wyamine) sulfate may be used intramuscularly as well as intravenously. Repeated injections may be given to maintain the systolic pressure at approximately 100 mm. Hg or, in the instance of previously hypertensive patients, at somewhat higher levels. Hydroxyamphetamine (Paredrine) is given in dosage of 10 to 20 mg. intramuscularly, or 5 to 10 mg. intravenously. The dosage of phenylephrine (Neo-Synephrine) is 5 mg. intramuscularly or intravenously in dilute solution at intervals of 15 minutes to an hour.[8] The intravenous route should be used only in critical situations. Epinephrine is hazardous and is contraindicated. The most potent agent of the group is arterenol, which may be effective when other preparations have failed. It cannot be given subcutaneously or intramuscularly. Extravascular administration produces severe necrosis and sloughing because of its marked vasoconstrictor property. It produces a generalized arterial, capillary, and venous vasoconstriction, with an increase in total peripheral resistance and a resultant increase in systolic, diastolic, and mean systemic and pulmonary arterial blood pressures. It does not increase the cardiac rate. Anxiety, restlessness, and apprehension, produced by epinephrine, do not occur with arterenol. Striking rises in oxygen tension in areas of myocardial ischemia have been demonstrated after its administration.[9]

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[7] Wiggers, C. J.: Myocardial Depression in Shock: Survey of Cardiodynamic Studies, Am. Heart J. **33**: 633, 1947. Mylon, E.; Cashman, C. W., Jr., and Winternitz, M. D.: Studies on Mechanisms Involved in Shock and Its Therapy, Am. J. Physiol. **142**: 299, 1944. Fishberg, A. M.; Hitzig, W. M., and King, F. H.: Circulatory Dynamics in Myocardial Infarction, Arch. Int. Med. **54**: 997 (Dec.) 1934. Stead, E. A., Jr., and Ebert, R. V.: Shock Syndrome Produced by Failure of the Heart, ibid. **69**: 369 (March) 1942.

[7a] Blumgart, H. L.; Schlesinger, M. J., and Zoll, P. M.: Multiple Fresh Coronary Occlusions in Patients with Antecedent Shock, Arch. Int. Med. **68**: 181 (Aug.) 1941.

[7b] Stewart, H. J.: Cardiac Therapy, New York, Paul B. Hoeber, Inc., 1952, p. 112.

[8] Gootnick, A., and Knox, F. H., Jr.: Management of Shock in Acute Myocardial Infarction, Circulation **7**: 511, 1953.

Arterenol is best used by slow intravenous drip, each cubic centimeter containing 4 to 12 mcg. It is supplied in 4 mg. ampuls, one to three of which are diluted in 1,000 cc. of 5% dextrose or isotonic sodium chloride to yield a solution for intravenous administration containing 4 to 12 mcg. per cubic centimeter. The flow of arterenol is maintained at a rate sufficient to elevate the systolic blood pressure to approximately 100 mm. Hg or to alleviate the clinical manifestations of shock. Twenty to thirty drops per minute of the 4 mcg. per cubic centimeter solution are usually necessary. After the blood pressure has been stabilized for several hours, dosage may be gradually reduced. Abrupt cessation may result in sudden drop in blood pressure. It is frequently advisable to follow arterenol with intravenous infusion of 5% dextrose in water for an additional 12 to 24 hours in order to facilitate emergency therapy if needed. Occasionally when there is no satisfactory response to arterenol and the veins are collapsed, intravenous transfusion of 250 cc. or more of plasma may enhance the effectiveness of the drug. In some patients, continuous administration of arterenol may be necessary for as long as six or more days before it becomes evident, on reduction of the dosage, that the patient can maintain his blood pressure without this therapy.

Certain precautions are of the utmost importance. Extravascular infiltration of arterenol may result in intense vasospasm, with subsequent necrosis and ulceration of the skin. This is particularly likely to occur if the veins of the hand or foot are used. Intravenous infusions in the leg are to be administered with caution in the presence of peripheral vascular disease or diabetes mellitus. Local venospasm, pallor, cold skin, and cyanosis in the area of insertion of the needle within 1 to 24 hours of the start of infusion have been noted. Subsequently a red, streaky phlebitis surrounds the area. Vesicular eruptions or superficial ulcerations may occur in some of these patients, but complete healing generally occurs. The application of warm packs at and above the level of the needle during infusions has decreased the incidence and severity of cutaneous reactions and should be generally employed.

In patients with congestive failure or pulmonary edema, the possibility of their aggravation by arterenol must be considered. The increase in arterial, capillary, and venous pressures in the pulmonary circuit following the administration of arterenol in normotensive persons supports this possibility. The evidence to date, however, indicates that arterenol in such patients does not aggravate pulmonary edema or congestive failure, and in some of these patients immediate improvement was observed. The pressor effect of arterenol has been potentiated experimentally by desoxycorticosterone acetate, tetraethylammonium bromide, corticotropin, and cortisone. The available clinical data are at present insufficient to permit any conclusions concerning the clinical effectiveness of these agents in conjunction with arterenol in the treatment of shock.[10]

Clinical experience indicates that by the use of arterenol or other pressor amines the mortality in acute myocardial infarction may be decreased to a significant though limited extent. It is to be remembered that treatment with these agents is directed at only one consequence of the underlying pathological condition, that shock generally occurs in those most gravely ill, and that the mortality rate in such patients is inevitably high. To summarize, the earlier shock is treated, the greater the likelihood of success. When, after repeated intramuscular injections of phenylephrine, or similar vasopressor agents, the blood pressure fails to be sustained by the patient or if the shock is severe, arterenol is the drug of choice. It is to be employed in accordance with the precautions outlined above. The concomitant intravenous use of saline solutions, plasma, or blood may be necessary.

Shock and acute pulmonary edema not infrequently occur simultaneously and present an almost insoluble therapeutic problem that generally ends fatally. In all patients with shock due to acute myocardial infarction, peripheral vasomotor collapse with defective venous return and diminished cardiac output play important roles. In the patients with left ventricular failure, the pulmonary edema reflects predominant weakness of the left ventricle relative to the right ventricle. Cardiopulmonic reflexes may also be important. Rapid digitalization as well as the other measures previously described should be employed to combat shock. In occasional patients showing both shock and left ventricular failure, the veins may be full and engorged. Under such circumstances temporary trapping of blood in the extremities to reduce venous return by the application of tourniquets or even venesection must be considered. It is difficult to evaluate the effectiveness of these procedures, since these patients represent the most precarious and gravely ill group. Oxygen therapy with alcohol vapor inhalation is useful.

Cardiac arrhythmias frequently occur in acute myocardial infarction and may to an important degree be responsible for shock or left ventricular failure with pulmonary edema. The discovery by Zoll [11] that the heart in the complete standstill of Stokes-Adams syndrome may be resuscitated by the application of external electrical stimuli to the chest wall raises the hope that cardiac arrest in some cases of acute myocardial infarction may be treated successfully by this method.

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[9] Sayen, J. J.: Favorable Effects of L-Nor-Epinephrine on Experimental Localized Ischemia of Myocardium, Proceedings of the 44th Meeting of the American Society for Clinical Investigation, May 5, 1952.

[10] Kurland, G. S., and Malach, M.: The Clinical Use of Nor-Epinephrine in the Treatment of Shock Accompanying Myocardial Infarction and Other Conditions, New England J. Med. **247**: 383, 1952.

[11] Zoll, P. M.: Resuscitation of the Heart in Ventricular Standstill by External Electric Stimulation, New England J. Med. **247**: 768, 1952.

SUMMARY AND CONCLUSIONS

The clinical management of acute myocardial infarction is summarized. The importance of rest, the control of pain, the use of oxygen, aminophylline, digitalis, quinidine sulfate, procaine amide hydrochloride, glyceryl trinitrate (nitroglycerin), and anticoagulant therapy are discussed. The treatment of associated shock is also outlined. Moderate to severe shock with systolic blood pressure below 80 mm. Hg may become irreversible or refractory to all methods of treatment within an hour. The need for early and energetic treatment with vasopressor drugs, plasma, or whole blood is thus indicated. The use of various vasopressor agents, particularly arterenol, is discussed in detail. Intravenously administered saline solutions, plasma, or blood may be valuable adjuncts. Clinical experience has demonstrated that arterenol or other pressor amines reduce the mortality of acute myocardial infarction to a significant though limited extent.

330 Brookline Ave. (15).

CLINICAL TRIAD OF MASSIVE SPLENIC INFARCTION, SICKLEMIA TRAIT, AND HIGH ALTITUDE FLYING

Capt. Jack C. Cooley, Capt. Wesley L. Peterson, Lieut. Charles E. Engel
and
Lieut. Col. James P. Jernigan, (MC), U. S. Air Force

In 1950, Sullivan reported one case of sicklemia trait with sudden splenic enlargement following an airplane flight.[1] This case report was reviewed by Margolies [2] in 1951 in his comprehensive review of the literature on sickle cell anemia. He states that it was difficult to believe that the splenic enlargement in this sicklemic patient was secondary to low oxygen tension in high altitude flying. He felt that this single case was inadequate proof of any specific relationship between sicklemia and high altitude flying.

The purpose of this report is to add to the literature six additional cases of splenic enlargement and infarction in high altitude flight. In five of these cases there was definite sickling in peripheral blood on cysteine preparation,[3] while in one case sickling could be demonstrated only in the pathological specimen.

In the six cases reported there was a remarkably similar clinical pattern. All the patients were examined shortly after high altitude flying in unpressurized aircraft at an altitude of between 10,000 and 15,000 ft. The duration of the flight at this altitude was in no case under one hour. All six patients were Negroes, and their ages ranged from 18 to 23 years. The pattern of symptomatology in each case was remarkably similar, as was the clinical course prior to splenectomy in five of the six cases. All patients felt well on boarding the aircraft. Within one-half to four hours after take-off, all became nauseated. The nausea was followed by frequent emesis and the occurrence of a dull ache to sharp pains in the left upper quadrant of the abdomen. In each case the pain became progressively worse, and in five of the six cases a special landing was made because of the severity of the patients' illness.

On admission to the hospital, the temperature of all patients ranged from 98 to 99.6 F. Physical examination revealed all patients to be subacutely ill. They all had moderate to marked tenderness in the left upper quadrant of the abdomen, with varying amounts of abdominal muscular spasm and rebound tenderness. All demonstrated paralytic ileus as manifested by diminished to absent bowel sounds. Two patients had anterior tibial scars.

The temperature curves of all patients rose to 101 to 104 F within 48 hours. One patient (case 1) became markedly febrile at 72 hours. The febrile response in all cases was associated with anorexia, sweating, moderate abdominal distention, and increasing abdominal pain, primarily in the left upper quadrant. In two of the patients, examination of the chest revealed diminished breath sounds and increased dullness to percussion in the lower posterior and lateral areas of the left side of the chest. Chest roentgenograms in these two cases revealed pleural effusions on the left side.

Roentgenograms of the abdomen taken in the upright, recumbent, and lateral positions revealed one or more of the following significant findings: (1) localized dilatation of small bowel in left upper quadrant; (2) splenic enlargement; (3) elevation of the left diaphragm; (4) a serrated margin of the greater curvature of the stomach; (5) anterior medial displacement of the stomach and colon; (6) pleural effusion on the left; and (7) absence of the properitoneal line on the left.

Laboratory examinations revealed definite sickling of erythrocytes on cysteine preparation in five patients. The remainder of the laboratory tests demonstrated no unusual or diagnostic abnormality and will be described individually in the case summaries.

Splenectomy was performed in each case. Three types of incisions were used: left rectus (three cases), left subcostal (two cases), and left rectus with thoracic extension (one case). General anesthesia was used to prevent hypoxia. Routine splenic pedicle ligation was carried out in each case. Supportive measures, including parenteral administration of fluids and whole blood, were used as indicated.

A gross and microscopic pathological examination was carried out on each spleen and revealed both gross and microscopic evidence of massive infarction without evi-

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Captain Cooley is now a Fellow in Surgery at the Mayo Clinic, Rochester, Minn.

Capt. C. R. Robison made the pathological interpretations.

[1] Sullivan, B. H., Jr.: Danger of Airplane Flight to Persons with Sicklemia, Ann. Int. Med. 32: 338-342 (Feb.) 1950.

[2] Margolies, M. P.: Sickle Cell Anemia: A Composite Study and Survey, Medicine 30: 343-357 (Dec.) 1951.

[3] Thomas, L., and Stetson, C. A., Jr.: Sulfhydryl Compounds and the Sickling Phenomenon, Bull. Johns Hopkins Hosp. 83: 176-180 (Aug.) 1948.

dence of major splenic arterial thrombosis. Following are the summaries of the individual case reports.

REPORT OF CASES

CASE 1.—A 22-year-old Negro was admitted to the Francis E. Warren Air Force Hospital on July 25, 1952. The patient had left Korea one month previously and traveled by ship to the West Coast. He then boarded a military aircraft enroute to the East Coast. Several hours after the onset of the flight, the patient noted an onset of dull aching pain in the left side. This was not severe to begin with. After a short time, however, the patient began vomiting and the pain gradually increased. The pain was increased by respiration and increased by motion. There was no history of leg ulcers or unusual diseases while he was in Korea. There was no significant family history.

Examination revealed a subacutely ill Negro with a temperature of 99 F and a blood pressure of 134/80 mm. Hg. Positive findings were that of moderate tenderness and muscle guarding in the left upper quadrant of the abdomen, left flank, and left costovertebral angle. Peristalsis was hypoactive. There was slight tenderness also over the left lateral lower rib cage. Laboratory studies revealed a white blood cell count of 15,300, with 86% neutrophils and 13% lymphocytes and 1% monocytes. The red blood cell count was 4,500,000, with 11.9 gm. per 100 cc. of hemoglobin.

During the next few days the patient's pain gradually increased in severity and the temperature began to rise. The white blood cell count rose to 33,000, with 85% neutrophils and 15% lymphocytes. Roentgenograms of the chest revealed a pleural effusion at the left costophrenic angle. A scout film of the abdomen revealed ileus of the bowel. An initial diagnosis was made of pleural effusion and probable pneumonia of the lower lobe of the left lung. The temperature reached a maximum of 104 F. The patient was treated with chlortetracycline (aureomycin). Multiple thoracenteses were performed in the ninth interspace in the posterior axillary line, and grossly bloody fluid was obtained. Culture of the fluid was negative. However, on Aug. 7 and 8, the thoracenteses were performed in a slightly higher level of the left side of the chest, and straw-colored fluid was obtained. It was then concluded that in the previous thoracenteses the body had actually been entered below the diaphragm. Malarial smears and the usual blood tests for sickling were negative.

On Aug. 19 an exploratory laparotomy was performed. Exploration revealed a soft, mushy, completely infarcted spleen. A splenectomy was performed, and the subdiaphragmatic space was drained. Postoperatively, a subdiaphragmatic abscess developed, which was drained posteriorly with removal of the left 12th rib on Sept. 5. Postoperatively, there were three positive cysteine tests for sickling of the red blood cells. The patient was discharged from the hospital on Dec. 10.

Pathological examination of the spleen revealed a massive infarction of the upper pole of the spleen, with some liquefactive necrosis and coagulation necrosis. The spleen weighed 144 gm. The red blood cells in the splenic sinuses showed some elongation and occasional lancet configuration that were suggestive of sickle cells.

CASE 2.—An 18-year-old Negro youth was admitted to the Francis E. Warren Air Force Hospital in October, 1950. He gave a history of having flown from Lackland Air Force Base, Texas, to Francis E. Warren Air Force Base, Wyoming. He had not flown in any large aircraft previously. Approximately two hours after the onset of the flight, midabdominal pain and vomiting developed. There was no significant past history or family history.

Results of examination were essentially negative, except for the finding of some abdominal tenderness in the midsection and left upper quadrant. For three days the vomiting and pain continued, after which the symptoms and findings subsided except for a continuing slight to moderate aching pain in the left upper quadrant of the abdomen. The temperature rose slightly. The exact course and the laboratory findings are unknown because of the loss of a portion of the patient's record. It is known, however, that no red blood cell fragility or sickle cell blood tests were performed. X-ray studies revealed a density in the left upper quadrant of the abdomen.

Approximately three weeks following admission to the hospital, surgical exploration was done, during which a large, grossly infarcted spleen was found. A splenectomy was performed. In December, 1952, the patient was seen by us and examination revealed no abnormality except for a well-healed scar in the left upper abdominal quadrant. The patient was asymptomatic. Cysteine blood tests for the sickle cell trait were positive.

CASE 3.—A 23-year-old Negro was admitted to the Francis E. Warren Air Force Hospital on April 4, 1953. The patient had previously been stationed in Korea and was enroute in an airplane from the West Coast to the East. Within one-half hour after the onset of the flight, severe pain developed in the left upper abdominal quadrant. Nausea and vomiting were present. There was no significant family history. The patient gave a history of having had recurring ulcerations of the skin involving the lower third of both legs. Supernumerary digits were present on the hands.

Examination revealed an acutely ill Negro with a temperature of 99.6 F and blood pressure of 108/70 mm. Hg. There was marked abdominal tenderness and guarding in the left upper quadrant, with a palpable mass in the left upper quadrant of the abdomen extending to 4 cm. below the left costal margin. Laboratory studies revealed a red blood cell count of 2,740,000, with 8 gm. per 100 cc. of hemoglobin. The white blood cell count was 11,000, with 89% neutrophils. The corrected sedimentation rate was 0 mm. per hour. Sickling of red blood cells was noted in the counting chamber when the first total red blood cell count was done. A cysteine test for sickling was positive. The results of red blood cell fragility tests were normal. Malarial smears were negative. A flat plate of the abdomen revealed the spleen to be enlarged to approximately three times normal size and to extend well below the left costal margin. The patient's condition gradually became worse, and the temperature gradually increased, reaching a peak of 102.6 F.

On the day after admission abdominal exploration revealed a grossly infarcted spleen approximately four times normal size. A splenectomy was performed. Pathological examination of the spleen showed that there was a recent massive infarction and generalized acute passive congestion. The spleen weighed 804 gm. Many sickle cells were found in the pathological specimen.

CASE 4.—A 21-year-old Negro was admitted to the hospital at Francis E. Warren Air Force Base on April 22, 1953. He had previously been stationed in Korea and had returned to the West Coast by ship. He then boarded an aircraft that was enroute to the East Coast. One-half hour following the onset of flight, severe sharp pain developed in the left upper abdomen, with radiation primarily to the left flank and left costovertebral angle region. The patient vomited several times. There was no significant family history. He had had leg ulcers in childhood, and there was a history of addiction to heroin while he was in Korea.

Examination revealed a subacutely ill Negro with a temperature of 98.6 F. and blood pressure of 160/115 mm. Hg. Positive physical findings included a faint short systolic cardiac murmur at the left sternal border in the third intercostal space, and abdominal examination showed muscle guarding and tenderness in the left upper quadrant of the abdomen. Peristalsis was diminished, and there were no palpable masses or organs. Laboratory studies revealed a positive cysteine sickle cell test, 4,900,000 red blood cells, 16.4 gm. of hemoglobin per 100 cc. and 8,500 white blood cells, with 75% neutrophils. A scout roentgenogram of the abdomen revealed no abnormalities. During the next three days, the patient's clinical condition was essentially unchanged except for a gradually increasing temperature that rose to a maximum of 101.6 F. In the red blood cell fragility test the control began hemolysis with 0.46% saline solution, with the patient's blood beginning hemolysis with 0.40% saline solution. Healed pretibial scars were noted.

On April 25 the patient's symptoms increased in severity. Abdominal exploration revealed no abnormalities except a spleen enlarged approximately three times normal size and grossly completely infarcted. A splenectomy was performed. Pathological examination of the spleen showed it to be infarcted and congested; it weighed 325 gm.

Case 5.—A 23-year-old Negro was admitted to the hospital at Francis E. Warren Air Force Base on May 13, 1953. The patient had been enroute from Korea to the East Coast and had boarded an airplane in California that was eastward bound. Approximately one hour after the onset of the flight, there was a sudden onset of severe pain in the left upper quadrant of the abdomen, with associated vomiting. There was no radiation of the pain. There was no significant past history or family history.

Examination revealed a subacutely ill Negro with a temperature of 99 F and blood pressure of 140/90 mm. Hg. Positive physical findings were localized to the abdomen, where there was moderate tenderness in the left upper quadrant. There was mild generalized lower abdominal tenderness with rebound referred to the left upper quadrant. There was a palpable mass in the left flank. The extremities were normal. Laboratory studies revealed a white blood cell count of 18,800, with 95% neutrophils. The red blood cell count was 4,600,000, with a hemoglobin level of 14 gm. per 100 cc. A blood test for sickling was negative. In the red blood cell fragility test hemolysis of the control started with 0.42% saline solution, and the patient's blood began hemolysis with 0.40% saline solution. A Coombs' test and malarial smears were negative. The patient's condition gradually became worse, his temperature gradually increasing to a maximum of 101 F.

On the day after admission, abdominal exploration revealed a large grossly infarcted spleen. A splenectomy was performed. Postoperative blood tests were positive on two occasions for sickling. Pathological examination of the spleen revealed a massive splenic infarct. The spleen weighed 460 gm.

Case 6.—A 21-year-old Negro was admitted to the hospital at Francis E. Warren Air Force Base on May 20, 1953. He was enroute from Camp Stoneman, California, to the East by aircraft after having been previously stationed in Korea and recently transferred from Korea to the West Coast by ship. Approximately four hours after the onset of the flight, the patient was awakened from sleep with severe aching pain in the left upper abdomen. He vomited once. There was no radiation of the pain, but it was increased with respiration and movement. There was no significant past history or family history.

Examination revealed an acutely ill Negro lying on his right side. The temperature was 98.6 F and the blood pressure 130/80 mm. Hg. The positive findings were localized to the abdomen. There was moderate tenderness, with guarding in the upper abdomen being most marked in the left upper quadrant and left costovertebral angle region. There was a palpable spleen and abdominal bowel sounds were hypoactive. X-ray study of the abdomen revealed a segmental ileus in the left upper quadrant, with slight displacement of the stomach. Laboratory studies showed a white blood cell count of 24,300, with 90% neutrophils; there were 2,160,000 red blood cells with 11.9 gm. of hemoglobin per 100 cc. The red blood cell fragility test, malarial smears, sickle cell test, and agglutinations for infectious mononucleosis were negative. In the next 30 hours the patient's pain gradually increased, and the temperature rose to a maximum of 100.6 F. Repeat roentgenograms revealed an increase in the ileus in the left upper quadrant of the abdomen. A chest roentgenogram revealed a minimal pleural effusion at the left costophrenic angle.

On May 21 surgical exploration revealed a grossly and completely infarcted spleen approximately two to three times normal size. A splenectomy was performed. Pathological examination of the spleen showed an infarcted congested spleen in which groups of sickle cells were seen. The spleen weighed 260 gm.

COMMENT

We feel that these cases demonstrate a definite clinical picture in which the best treatment is early splenectomy. Case 1 demonstrates the potential complications that may attend conservative management. These complications included (1) a protracted toxic course, (2) massive left pleural effusion, and (3) left subphrenic abscess. As a result of the last complication, further surgical procedures were necessary. Although in Sullivan's[1] single case conservative measures were successful, we feel that the gravity of the complications in our first case and the pathological demonstration of massive splenic infarction in all are just indications for early splenectomy.

We feel, also, that the previous comments by Sullivan[1] and Findlay and associates[4] should be reemphasized, since our six cases support their views that a possible hazard exists for the Negro with the sickle cell trait in airplane flight. Although we were unable to demonstrate the sickling trait in one of our patients, we feel that this was probably the underlying factor in all cases and was related to high altitude flying with subsequent low oxygen tension.

We have no definite proof that a direct cause and effect relationship exists between high altitude flying, sicklemia trait, and splenic infarction; however, the triad is certainly suggested and cannot be overlooked. The military implications are obviously important and warrant further investigation.

SUMMARY

Six cases of massive splenic infarction in Negro males following high altitude flying are described. In five cases sickling was demonstrated on laboratory preparation. Splenectomy is the treatment of choice and was carried out in all six cases. The triad of sicklemia trait, high altitude flying, and splenic infarction is discussed. Possible military implications are mentioned.

3450th Medical Group, Francis E. Warren Air Force Base, Wyoming (Captain Peterson).

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[4] Findlay, G. M.; Boulter, E. A., and MacGibbon, C. B.: A Note on Sickling and Flying, J. Roy. Army M. Corps. 89: 138-141 (Sept.) 1947.

The Juvenile Diabetic.—The onset and nature of diabetes mellitus in the child differs from that seen in the adult. In the child the disease is acute and virulent. Very often the child is first seen in a diabetic coma. . . . The onset of acidosis and coma in the juvenile diabetic can be ascribed invariably to factors of infections and/or failure to increase the dose or total omission of the insulin. During the period of greatest sexual development a radical change in the character of the disease takes place, the disease becoming more severe. The insulin requirements mount rapidly and the nutritional needs increase at a rate sufficient to support the rapid growth. . . . It is believed that the increased activity of the various endocrine glands at this period of development tends to partially neutralize the effect of exogenous and endogenous insulin. Then too, the adolescent is making an emotional adjustment at this time, and emotional stress as well as physical exercise are major factors controlling the response to therapy. Insulin reactions are common, and their recognition may be more difficult than in the adult. Both the child and the mother should be thoroughly familiar with these reactions and the knowledge of how best to prevent them. Listlessness, negativism, peevishness, and circumoral pallor or signs and symptoms commonly found in the child. Headache, nausea and vomiting also may occur. The time relation of these reactions will depend upon the type of insulin used. In general, one of the rapidly acting insulins, regular or crystalline, is best used for children under five years of age, and protamine insulin, globin insulin or nonprotein nitrogen insulin with or without one of the rapidly acting insulins is used for children above this age.—G. J. Ney, M.D., The Juvenile Diabetic: A Survey of Recent Literature, *Archives of Pediatrics*, June, 1953.

dence of major splenic arterial thrombosis. Following are the summaries of the individual case reports.

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Examination revealed a subacutely ill Negro with a temperature of 99 F and a blood pressure of 134/80 mm. Hg. Positive findings were that of moderate tenderness and muscle guarding in the left upper quadrant of the abdomen, left flank, and left costovertebral angle. Peristalsis was hypoactive. There was slight tenderness also over the left lateral lower rib cage. Laboratory studies revealed a white blood cell count of 15,300, with 86% neutrophils and 13% lymphocytes and 1% monocytes. The red blood cell count was 4,500,000, with 11.9 gm. per 100 cc. of hemoglobin.

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Pathological examination of the spleen revealed a massive infarction of the upper pole of the spleen, with some liquefactive necrosis and coagulation necrosis. The spleen weighed 144 gm. The red blood cells in the splenic sinuses showed some elongation and occasional lancet configuration that were suggestive of sickle cells.

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Results of examination were essentially negative, except for the finding of some abdominal tenderness in the midsection and left upper quadrant. For three days the vomiting and pain continued, after which the symptoms and findings subsided except for a continuing slight to moderate aching pain in the left upper quadrant of the abdomen. The temperature rose slightly. The exact course and the laboratory findings are unknown because of the loss of a portion of the patient's record. It is known, however, that no red blood cell fragility or sickle cell blood tests were performed. X-ray studies revealed a density in the left upper quadrant of the abdomen.

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Case 3.—A 23-year-old Negro was admitted to the Francis E. Warren Air Force Hospital on April 4, 1953. The patient had previously been stationed in Korea and was enroute in an airplane from the West Coast to the East. Within one-half hour after the onset of the flight, severe pain developed in the left upper abdominal quadrant. Nausea and vomiting were present. There was no significant family history. The patient gave a history of having had recurring ulcerations of the skin involving the lower third of both legs. Supernumerary digits were present on the hands.

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On the day after admission abdominal exploration revealed a grossly infarcted spleen approximately four times normal size. A splenectomy was performed. Pathological examination of the spleen showed that there was a recent massive infarction and generalized acute passive congestion. The spleen weighed 804 gm. Many sickle cells were found in the pathological specimen.

Case 4.—A 21-year-old Negro was admitted to the hospital at Francis E. Warren Air Force Base on April 22, 1953. He had previously been stationed in Korea and had returned to the West Coast by ship. He then boarded an aircraft that was enroute to the East Coast. One-half hour following the onset of flight, severe sharp pain developed in the left upper abdomen, with radiation primarily to the left flank and left costovertebral angle region. The patient vomited several times. There was no significant family history. He had had leg ulcers in childhood, and there was a history of addiction to heroin while he was in Korea.

Examination revealed a subacutely ill Negro with a temperature of 98.6 F. and blood pressure of 160/115 mm. Hg. Positive physical findings included a faint short systolic cardiac murmur at the left sternal border in the third intercostal space, and abdominal examination showed muscle guarding and tenderness in the left upper quadrant of the abdomen. Peristalsis was diminished, and there were no palpable masses or organs. Laboratory studies revealed a positive cysteine sickle cell test, 4,900,000 red blood cells, 16.4 gm. of hemoglobin per 100 cc. and 8,500 white blood cells, with 75% neutrophils. A scout roentgenogram of the abdomen revealed no abnormalities. During the next three days, the patient's clinical condition was essentially unchanged except for a gradually increasing temperature that rose to a maximum of 101.6 F. In the red blood cell fragility test the control began hemolysis with 0.46% saline solution, with the patient's blood beginning hemolysis with 0.40% saline solution. Healed pretibial scars were noted.

On April 25 the patient's symptoms increased in severity. Abdominal exploration revealed no abnormalities except a spleen enlarged approximately three times normal size and grossly completely infarcted. A splenectomy was performed. Pathological examination of the spleen showed it to be infarcted and congested; it weighed 325 gm.

Case 5.—A 23-year-old Negro was admitted to the hospital at Francis E. Warren Air Force Base on May 13, 1953. The patient had been enroute from Korea to the East Coast and had boarded an airplane in California that was eastward bound. Approximately one hour after the onset of the flight, there was a sudden onset of severe pain in the left upper quadrant of the abdomen, with associated vomiting. There was no radiation of the pain. There was no significant past history or family history.

Examination revealed a subacutely ill Negro with a temperature of 99 F and blood pressure of 140/90 mm. Hg. Positive physical findings were localized to the abdomen, where there was moderate tenderness in the left upper quadrant. There was mild generalized lower abdominal tenderness with rebound referred to the left upper quadrant. There was a palpable mass in the left flank. The extremities were normal. Laboratory studies revealed a white blood cell count of 18,800, with 95% neutrophils. The red blood cell count was 4,600,000, with a hemoglobin level of 14 gm. per 100 cc. A blood test for sickling was negative. In the red blood cell fragility test hemolysis of the control started with 0.42% saline solution, and the patient's blood began hemolysis with 0.40% saline solution. A Coombs' test and malarial smears were negative. The patient's condition gradually became worse, his temperature gradually increasing to a maximum of 101 F.

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Case 6.—A 21-year-old Negro was admitted to the hospital at Francis E. Warren Air Force Base on May 20, 1953. He was enroute from Camp Stoneman, California, to the East by aircraft after having been previously stationed in Korea and recently transferred from Korea to the West Coast by ship. Approximately four hours after the onset of the flight, the patient was awakened from sleep with severe aching pain in the left upper abdomen. He vomited once. There was no radiation of the pain, but it was increased with respiration and movement. There was no significant past history or family history.

Examination revealed an acutely ill Negro lying on his right side. The temperature was 98.6 F and the blood pressure 130/80 mm. Hg. The positive findings were localized to the abdomen. There was moderate tenderness, with guarding in the upper abdomen being most marked in the left upper quadrant and left costovertebral angle region. There was a palpable spleen and abdominal bowel sounds were hypoactive. X-ray study of the abdomen revealed a segmental ileus in the left upper quadrant, with slight displacement of the stomach. Laboratory studies showed a white blood cell count of 24,300, with 90% neutrophils; there were 2,160,000 red blood cells with 11.9 gm. of hemoglobin per 100 cc. The red blood cell fragility test, malarial smears, sickle cell test, and agglutinations for infectious mononucleosis were negative. In the next 30 hours the patient's pain gradually increased, and the temperature rose to a maximum of 100.6 F. Repeat roentgenograms revealed an increase in the ileus in the left upper quadrant of the abdomen. A chest roentgenogram revealed a minimal pleural effusion at the left costophrenic angle.

On May 21 surgical exploration revealed a grossly and completely infarcted spleen approximately two to three times normal size. A splenectomy was performed. Pathological examination of the spleen showed an infarcted congested spleen in which groups of sickle cells were seen. The spleen weighed 260 gm.

COMMENT

We feel that these cases demonstrate a definite clinical picture in which the best treatment is early splenectomy. Case 1 demonstrates the potential complications that may attend conservative management. These complications included (1) a protracted toxic course, (2) massive left pleural effusion, and (3) left subphrenic abscess. As a result of the last complication, further surgical procedures were necessary. Although in Sullivan's [1] single case conservative measures were successful, we feel that the gravity of the complications in our first case and the pathological demonstration of massive splenic infarction in all are just indications for early splenectomy.

We feel, also, that the previous comments by Sullivan [1] and Findlay and associates [4] should be reemphasized, since our six cases support their views that a possible hazard exists for the Negro with the sickle cell trait in airplane flight. Although we were unable to demonstrate the sickling trait in one of our patients, we feel that this was probably the underlying factor in all cases and was related to high altitude flying with subsequent low oxygen tension.

We have no definite proof that a direct cause and effect relationship exists between high altitude flying, sicklemia trait, and splenic infarction; however, the triad is certainly suggested and cannot be overlooked. The military implications are obviously important and warrant further investigation.

SUMMARY

Six cases of massive splenic infarction in Negro males following high altitude flying are described. In five cases sickling was demonstrated on laboratory preparation. Splenectomy is the treatment of choice and was carried out in all six cases. The triad of sicklemia trait, high altitude flying, and splenic infarction is discussed. Possible military implications are mentioned.

3450th Medical Group, Francis E. Warren Air Force Base, Wyoming (Captain Peterson).

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[4] Findlay, G. M.; Boulter, E. A., and MacGibbon, C. B.: A Note on Sickling and Flying, J. Roy. Army M. Corps. 89: 138-141 (Sept.) 1947.

The Juvenile Diabetic.—The onset and nature of diabetes mellitus in the child differs from that seen in the adult. In the child the disease is acute and virulent. Very often the child is first seen in a diabetic coma. . . . The onset of acidosis and coma in the juvenile diabetic can be ascribed invariably to factors of infections and/or failure to increase the dose or total omission of the insulin. During the period of greatest sexual development a radical change in the character of the disease takes place, the disease becoming more severe. The insulin requirements mount rapidly and the nutritional needs increase at a rate sufficient to support the rapid growth. . . . It is believed that the increased activity of the various endocrine glands at this period of development tends to partially neutralize the effect of exogenous and endogenous insulin. Then too, the adolescent is making an emotional adjustment at this time, and emotional stress as well as physical exercise are major factors controlling the response to therapy. Insulin reactions are common, and their recognition may be more difficult than in the adult. Both the child and the mother should be thoroughly familiar with these reactions and the knowledge of how best to prevent them Listlessness, negativism, peevishness, and circumoral pallor are signs and symptoms commonly found in the child. Headache, nausea and vomiting also may occur. The time relation of these reactions will depend upon the type of insulin used. In general, one of the rapidly acting insulins, regular or crystaline, is best used for children under five years of age, and protamine insulin, globin insulin or nonprotein nitrogen insulin with or without one of the rapidly acting insulins is used for children above this age.—G. J. Ney, M.D., The Juvenile Diabetic: A Survey of Recent Literature, *Archives of Pediatrics,* June, 1953.

TREATMENT OF HODGKIN'S DISEASE AND THE LYMPHOSARCOMAS

Ovid O. Meyer, M.D., Madison, Wis.

In this presentation the treatment of Hodgkin's disease, the lymphoid cell type of lymphosarcoma, follicular lymphoblastoma, and reticulum cell sarcoma alone will be discussed, although it is accepted that the therapy of leukemia, particularly lymphocytic leukemia, might also be included, since the same or similar measures are often successfully employed for this disorder as well. This report is based on the management of patients treated in a lymphoma-leukemia outpatient clinic and general hospital for the past 20 years. Its purpose is to clarify, if possible, the status of therapy today for these entities and perhaps to suggest the optimal form of treatment under a variety of circumstances. When operative procedures and radiation were considered the sole successful therapy, the problem was simple; however, with newer therapeutic measures available, there may well be confusion in selecting the best treatment for the individual patient.

It is well known that when Thomas Hodgkin [1] in 1832 described cases of generalized lymphadenopathy and splenomegaly, not more than three or four represented what is now accepted as a pathological and clinical entity. The reports of Samuel Wilks [2] in 1856 and 1865 clarified the subject, however; he excluded some of Hodgkin's cases and, with the description of additional cases, established the disease as distinctive and suggested the name by which it has since been accepted. Space will not permit a survey of the pertinent literature over the past hundred years, but it has not yet been established whether this is a neoplastic disease or one due to an unknown infection. There are two schools of thought and each has its proponents, since at least the well-known clinical aspects are suggestive of both; in some cases the condition is more strongly indicative of infection and in others simulates neoplastic disease and in still other cases is suggestive of both. However, most investigators are in accord with the concept of Piney [3] that this is a disease of the reticuloendothelial system.

Jackson and Parker,[4] among others, describe Hodgkin's disease under three headings, based on pathological and to some extent clinical grounds: (*a*) paragranuloma, which only slightly resembles a true tumor and is comparatively benign; (*b*) granuloma, the type usually refered to when Hodgkin's disease is spoken of, which has been given more than 50 names over the years [5] and presents histological and clinical aspects suggesting both an inflammation and a tumor; and (*c*) Hodgkin's sarcoma, which, in the opinion of Jackson and Parker,[4] has the characteristics of a true tumor, occurs usually after the patient is the age of 50, spreads quickly, and is more rapidly fatal than the other two. It is generally accepted that paragranuloma may at any time undergo transition to granuloma, and granuloma may terminate as Hodgkin's sarcoma. Furthermore, in certain cases different sites of the disease may present different lesions.

The classification of the types of Hodgkin's disease is significant from the standpoint of prognosis and therapy, and, since emphasis has been placed upon this in recent years by several workers in the field, it seems desirable to make note of it. Furthermore, it would seem justifiable, when analyzing a series of cases, to conclude that there are differences in prognosis for the three types. However, when dealing with the individual patient, we have not found this classification helpful, since there have been many exceptions to the rule; some patients with Hodgkin's sarcoma live many years with a modicum of therapy, and some with granuloma have a very short, fulminating course. Hoster [6] and Slaughter and Craver,[7] too, have been unable to correlate the clinical course, response to therapy, or duration of life with the histopathology of the diseased tissue.

With the cause of Hodgkin's disease still unknown, one is forced to further admit that there is no known cure, although in rare instances a patient may appear to be cured for many years and, still more seldom, may be cured. Nevertheless, therapeutic agents are available that now, to a greater extent than five years ago, are efficacious in controlling symptoms, in permitting a more comfortable and economically sound life, and, it is my belief, in prolonging life in many instances.

I would urge in this introduction that a totally pessimistic outlook is undesirable when dealing with the individual patient with Hodgkin's disease or the lymphosarcomas. Although the average duration of life may be only two or three years or slightly more, many patients live well beyond this period, carrying on an active, useful life. Everyone knows of patients who have lived 10, 15, and 20 years after the diagnosis was made, and one of our patients died last December of a cerebral accident after having had Hodgkin's disease with symptoms intermittently for 25 years, during which time she led a busy life and reared five children.

Many drugs (Hoster and Dratman [8] list over 50) have been used in the treatment of Hodgkin's disease. A solution of potassium arsenite (Fowler's solution) particularly has widely been used, and it is mentioned in the first edition of Osler's "Practice of Medicine" as having efficacy. Whereas it appears to have little value in the lymphoblastomas, it is occasionally very effective in chronic granulocytic leukemia, thus resembling a modern drug urethan (ethyl carbamate). Gomers and Broadbent, according to Osler, recommended the use of phosphorus, and Osler advocated its use if potassium arsenite solution was not well tolerated.

IRRADIATION

Roentgen irradiation was first employed in the treatment of Hodgkin's disease between 1902 and 1905 by Pusey, Coley, Williams, Childs, Steinwand, Heineke, and others,[9] and it is still unsurpassed for treatment in most

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From the Department of Medicine, University of Wisconsin Medical School.

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The nitrogen mustard and triethylene melamine were supplied by J. M. Ruegsegger, M.D., Lederle Laboratories, Pearl River, N. Y.

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cases of Hodgkin's disease, lymphosarcoma, reticulum cell sarcoma, and follicular lymphoblastoma. Follicular lymphoblastoma is the most sensitive of tumors to roentgen therapy. There are many techniques and recommendations of dosages, each with its advocates for the various methods of administration, but these will not be discussed since there are many sources for this information, including Pohle,[10] O'Brien,[11] Gilbert,[12] and Merner and Stenstrom.[13]

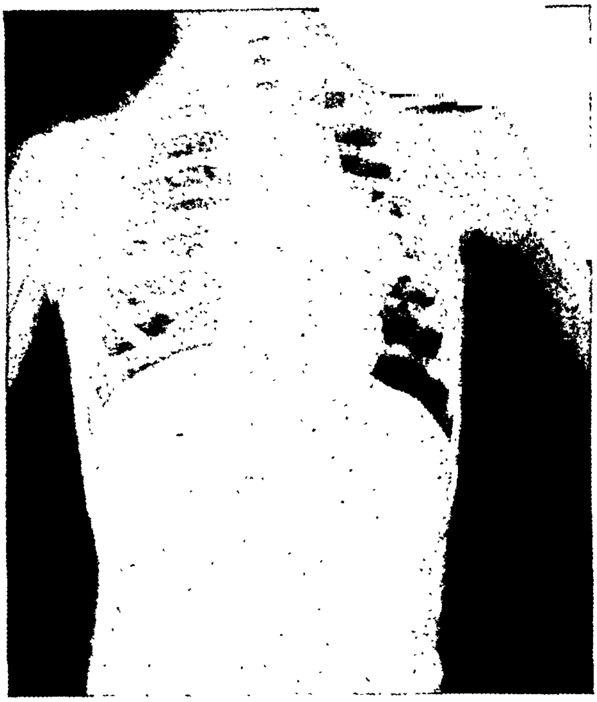

Fig. 1.—Roentgenogram of the chest made on June 7, 1937. A mediastinal mass is visible on the left side.

High voltage therapy is usually employed and is directed to all detectable sites of disease. At the University of Wisconsin we ordinarily use heavily filtered radiation of short wave length (160 to 200 kv., 0.5 mm. Cu plus 1 mm. Al; the half-value layer of Cu equals 0.75 to 1 mm.) in order to avoid undesirable skin reactions and yet permit a sufficient dose to the underlying diseased tissue. In the first series of treatments we usually administer 150 to 200 r (in air) per field and do not expose more than two fields per day up to a total of 1,600 to 2,000 r per field. Treatment may be given daily or every second or third day, depending on the reaction of the patient to the therapy. To minimize x-ray sickness, which is not uncommon, we now usually administer a suppository containing 65 mg. of pentobarbital sodium before the treatment and/or 50 to 100 mg. of dimenhydrinate (Dramamine) orally before and, if necessary, after therapy.

Roentgen irradiation has depressing effects upon the bone marrow, and the usual earliest sign of this is leukopenia. Hence, while the patient is undergoing therapy, especially if the doses are large, frequent leukocyte counts are made to avoid extreme leukopenia. There is no arbitrary level of leukocytes to indicate that treatment should be discontinued, however, as there must be individualization of therapy and an occasional patient may have leukopenia before therapy is started. It is our usual but not invariable policy to give one or more transfusions prior to roentgen therapy if the hemoglobin level is 50% of normal or less and the erythrocyte count 2,500,000 or less.

Bone lesions, which are no rarity, usually necessitate intensive therapy, and for these the results are often favorable. Only rarely do we use general body exposure. Therapy is given as needed to effect the relief of symptoms and induce clinical remission. The occasional remarkable course of a patient who has been treated by roentgen therapy is exemplified in the following case:

REPORT OF A CASE

A 7-year-old boy was first seen at the University Hospitals June 7, 1937, with the complaint of tiredness. Since he had had scarlet fever, three years before, lymph nodes in the neck had been enlarged. For three or four weeks before admission the nodes had increased in size, and greater tiredness, weakness, and pallor had developed.

Examination showed pallor in a thin, listless boy weighing 49 lb. (22.2 kg.). There were several enlarged cervical, axillary, and inguinal nodes, the largest in the neck being 3 cm. in diameter, with parasternal dulness to the left. The spleen could be felt 6 cm. below the costal margin, and the liver edge was just palpable.

The hemoglobin level was 11 gm. per 100 cc. (71%) (Haden-Hauser), and there were 3,900,000 erythrocytes. There were 7,900 leukocytes, with 69.8% neutrophils, 14.2% monocytes, and 0.4% eosinophils. The platelets were moderately increased in number in the smear. The chest roentgenograms showed a mediastinal mass (fig. 1). After a biopsy of the largest cervical node, the patient's condition was diagnosed as Hodgkin's disease by Dr. William Bayley. Dr. Walter Jaeschke reviewed the slides two years ago (fig. 2) and again interpreted the malady as Hodgkin's disease.

In June, 1937, the patient received a total of eight roentgen ray treatments of 150 r each over the anterior and posterior mediastinum, the spleen, and the right cervical regions. In March, 1938, he received three treatments of 150 r to the right and left cervical regions and three treatments to the right and left inguinal regions. In July, 1939, over a period of four days, he received four treatments of 150 r to the cervical, axillary, and inguinal regions bilaterally. The response in the mediastinal lymph nodes is shown in figure 3. He has had no therapy since this date, and he has been without symptoms or abnormal signs. He was well and happy just before he graduated from the the University of Wisconsin in June, 1952, at the age of 22. He was still well as of June, 1953, and was employed in a newspaper office.

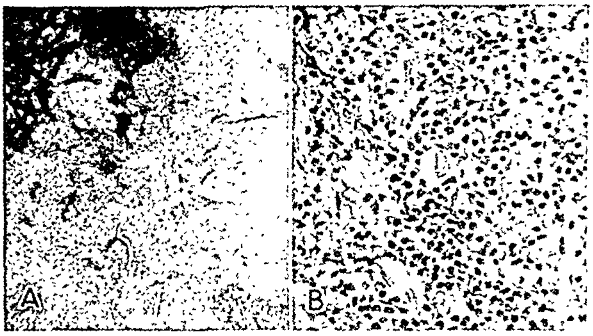

Fig. 2.—Microscopic views of sections of the excised lymph node under low power magnification (*A*) (× 25) and under high power magnification (*B*) (× 100)

The diagnosis in this case seems to be unquestionable. Furthermore, the disease was widespread in superficial lymph nodes, mediastinum, and spleen and productive of systemic symptoms. There are some who believe that either mediastinal or splenic, and especially splenic, involvement implies a poor prognosis, but that is not necessarily true. Hoster [7] believed—and this is generally accepted—that the prognosis is more unfavorable in children, but certainly there are exceptions. Peters [14] found that the early age group tended to respond better to roentgen therapy than the later age groups.

RADIUM

Radium is now rarely used in the treatment of lymphomatous disease, for it has certain disadvantages, such as greater likelihood of skin damage. It is also more difficult to use in treating any but sharply circumscribed lesions. With localized lesions it can be used effectively, however, but even then has no significant advantage over roentgen irradiation. The effects of radium and roentgen therapy upon the diseased tissue are, however, analogous.

RADIOACTIVE SUBSTANCES

Although colloidal manganese (half-life 310 days) has been used by Hahn and Sheppard,[15] radioactive phosphorus, or P^{32} (half-life 14.3 days), alone has had extensive trial in the treatment of Hodgkin's disease, the lymphosarcomas, leukemias, and polycythemia rubra vera. It is especially effective in polycythemia rubra vera and granulocytic leukemia and rather disappointing in the treatment of the others. The unsatisfactory results in the latter might be due to the lack of localization of the radioactive phosphorus to the reticuloendothelial tissues after oral or intravenous administration, whereas there is a high degree of affinity for the myeloid tissues.

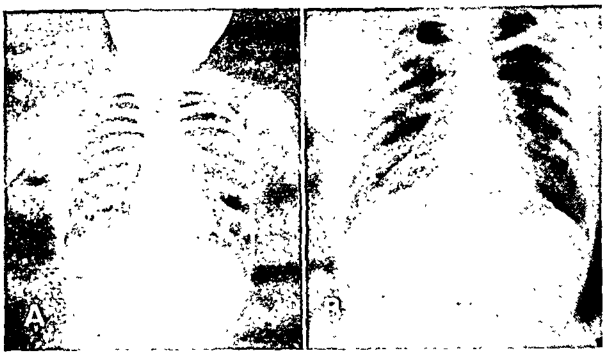

Fig. 3.—Roentgenograms of the chest made on Oct. 4, 1937 (*A*) and May 25, 1951 (*B*).

Hoster, Doan, and Schumacher [16] found radioactive phosphorus to be of no therapeutic value in the treatment in 11 selected cases of Hodgkin's disease. As it is our belief that other available forms of therapy are better than P^{32} in the diseases under discussion, we do not use it. Should one choose to employ it, as in other types of therapy, individualization of dosage is required.

NITROGEN MUSTARD

The nitrogen mustards, tris (beta-chloroethyl) amine hydrochloride and methyl-bis (beta-chloroethyl) amine hydrochloride, were first given to human beings with terminal neoplastic disease in 1942 by Gilman and his associates. The chemistry and pharmacology were reviewed by Gilman and Philips [17] in 1946. Subsequently, several reports [18] among others concerning the effectiveness of nitrogen mustards in Hodgkin's disease, the lymphosarcomas, leukemias, and other malignant diseases have been published. Gradually, employment of the bis compound alone has become standard, and this has been marketed the past few years under the trade name of Mustargen (Merck). The code designation is HN_2.

The nitrogen mustards are leukotoxic, but this it not owing to the nitrogen mustards themselves but to the first ionization product, the ethylenimonium derivatives. The effects depend on inhibition of enzyme systems within the cell and mitoses, but other effects, too, are important.

Nitrogen mustard is a white powder that rapidly loses its potency in solution; hence, when water is added, the material should be injected and not allowed to stand. As concentrated solutions are very damaging to veins, producing pain with thrombophlebitis, it is customary to inject the solution (1 mg. per cubic centimeter) through the tubing of a solution of dextrose or saline solution (usually 250 cc.) that is being administered intravenously. The dose is 0.1 mg. per kilogram of body weight, and a course totals 0.4 to 0.6 mg. per kilogram, which is usually given over a period of 4 to 12 days. Since nausea and vomiting follow the administration of the drug in many of the patients, it is our custom to administer the dose at bedtime after giving the patient a sedative, usually a barbiturate, to minimize the period of discomfort.

We have found that nitrogen mustard is a valuable drug, particularly in Hodgkin's disease, but is less valuable in the lymphosarcomas and leukemias. It is capable of producing subjective and objective benefits akin to those obtained with radiation therapy. It is most useful when there is widespread systemic disease or severe systemic intoxication in which radiation therapy might be hazardous or when the patient is no longer responsive to radiation therapy. There is some evidence that responsiveness to roentgen therapy may be occasionally restored following nitrogen mustard therapy.[18a]

The remissions induced are, in our experience, usually of shorter duration, 6 weeks to 13 weeks, than those following roentgen therapy. The remissions may, however, be for as long as a year. The effect is likely to be seen promptly, within a week, and is maximal in three to four weeks. The margin of safety in the use of nitrogen mustard is narrow, and serious toxic effects upon the blood-forming organs are to be guarded against. Leukopenia, granulocytopenia, thrombocytopenia, and anemia are all serious potentialities. The maximum depressant effect of the drug is usually between the 10th and 20th day, and a second course of therapy should be avoided during this period. However, it has been a common practice to repeat a course when indicated after six weeks. The remissions in repeated courses are often shorter than those initially achieved, and ultimately there is no response; there is a lack of any appreciable response oftener than occurs with roentgen therapy, but this can probably be explained by the fact that most of our treated patients have been in late stages and have had previous extensive radiation. Weisberger and Heinle [19] have found that when L-cysteine is previously administered, it exerts a protective action against the leukopenia induced by nitrogen mustard.

The occasional employment of nitrogen mustard in an apparently desperate situation with good temporary results is exemplified in the following case:

A 14-year-old white boy was first seen at the University Hospitals May 11, 1950. In December, 1949, and again in March, 1950, he had a stabbing pain in the left supraclavicular region and anterior chest. Roentgenograms demonstrated mediastinal adenopathy. He was large and obese, weighing 182 lb. (82.6 kg.), and appeared to be in excellent health. There were two enlarged, firm, nontender lymph nodes in the cervical regions. There were no other palpable nodes, and the spleen was not palpable.

The hemoglobin level and erythrocyte count were normal, with 9,300 leukocytes and 73% neutrophils. Roentgenographic examination of the chest showed an upper anterior mediastinal tumor extending 5 cm. to the right and left of the midline. By biopsy of a lymph node, lymphosarcoma was diagnosed by Dr. Walter H. Jaeschke. Ten radiation treatments of 200 r were administered to the anterior and posterior mediastinum, and the patient was discharged.

After leading a normal life, going to school, and being active without complaints, he became chilled about Oct. 10 at a football game. Subsequently, he had cough, easy fatigability, dyspnea, anorexia, and, for a week, emesis almost every time he ate. Pallor had been noted for a week, and for this period he had been almost anuric. He had had hematemesis, black stools, and hematuria. There had been some severe right flank pain for a few days.

He was still well nourished but extremely pallid and seemingly very ill when admitted to the hospital on Nov. 8, 1950. His temperature reached 102 F rectally. There was a flame-shaped hemorrhage in the right fundus. The blood pressure was 140/80 mm. Hg, and there were hard, fixed nodes in the cervical region. A few rales could be heard in both lungs posteriorly. There was rigidity of the abdomen, marked bilateral flank tenderness, and no bladder distention. The tongue was dry, and the breath uriniferous. Catheterization produced 1 cc. of bloody urine. Indwelling ureteral catheters were inserted by the urological consultant the night of admission.

There was a hemoglobin level of 5 gm. (Leitz-photoelectric colorimeter), 1,520,000 erythrocytes, and 58,000 leukocytes, with 88.5% lymphocytes. The urine contained 6 red blood cells per high power field. The nonprotein nitrogen level was 185 mg. per 100 cc., the creatinine level 13.5 mg. per 100 cc., and the carbon dioxide level 34 vol. %. The serum sodium content was 143 mEq. and the potassium content 6.9 mEq. per liter.

The patient was given 500 cc. of blood by transfusion on the night of admission, 1,000 cc. on Nov. 10, 1,000 cc. on Nov. 14, and 500 cc. on Nov. 28 and 29 and Dec. 1. Faced with a desperate situation, we decided to give him nitrogen mustard. On Nov. 11 the patient was given 7.7 mg. of nitrogen mustard intravenously, a second dose on Nov. 13, a third on Nov. 16, and a fourth on Nov. 18. Fluids and electrolytes were administered in an attempt to maintain balance without overloading. The nonprotein nitrogen level rose to 300 mg. on Nov. 15 and then began to decline. On Nov. 11 diuresis began, with an output of 5,435 cc., and the output remained at high levels, over 2,500 cc., for several days thereafter. On Nov. 19 the nonprotein nitrogen was 189 mg.; then it rapidly decreased day by day, so that by Nov. 27 it was 37 mg. and on Nov. 30 it was 32 mg. The patient was allowed up and about in a wheel chair; he was almost afebrile, and went home on Dec. 1.

He returned to the hospital on Jan. 8, 1951. He had been quite well at home and had been following a normal daily routine and attending school. He had received three additional transfusions at home.

He was of good color and his blood pressure was 130/84 mm. Hg. There was neither superficial lymph node nor splenic enlargement. The hemoglobin level was 14 gm. and there were 4,600,000 erythrocytes. The leukocyte count was 9,200, with 79.2% neutrophils. The nonprotein nitrogen level was 34 mg. A chest roentgenogram showed no mediastinal mass, and the lungs were clear. He was discharged Jan. 10, returned in March, and was still quite well. He was observed in the outpatient department and in the hospital until his death Aug. 26, 1951, at home. His last admission was June 25, 1951, when he was very ill. He exhibited retinal hemorrhages, choked optic disks, and multiple ecchymoses on the arms, legs, and abdomen. The hemoglobin level then was 4.65 gm. The erythrocyte count was 1,100,000 and the leukocyte count 84,000, with 90% lymphocytes. The nonprotein nitrogen level was 189 mg. and the creatinine level 4.4 mg. per 100 cc.

As he had had nitrogen mustard therapy in March and roentgen therapy in April without apparent benefit, triethylene melamine was given, and, although the leukocyte count fell to 1,750, there was no marked improvement in his condition.

It appeared to us that in this case nitrogen mustard was strikingly effective in playing some role in producing a very satisfactory remission in a desperately ill patient. The situation was so acute that it would seem, in this instance, that the intravenous administration of nitrogen mustard was the treatment of choice.

NITROGEN MUSTARD AND IRRADIATION

Rose and his associates [20] have combined nitrogen mustard therapy with irradiation by giving a single large dose of 0.3 mg. per kilogram of body weight for the systemic effects followed by a single large dose of irradiation of up to 600 to 1200 r, ideally 800 r, to a single local site. The effect was better in Hodgkin's disease than in lymphosarcoma or reticulum cell sarcoma. The results did not clearly indicate that the combined therapy was better, but there was an advantage in that the period of hospitalization was shortened. It was observed that the combination can be given with reasonable safety without excessive bone marrow damage if leukopenia does not exist prior to treatment.

TRIETHYLENE MELAMINE

Triethylene melamine was found to have nitrogen mustard-like properties in animal experiments in 1949,[21] and shortly thereafter clinical studies [22] demonstrated the effectiveness of this drug in Hodgkin's disease, lymphosarcoma, and leukemia. The action of triethylene melamine, like that of nitrogen mustard, depends on transformation to an ethylenimonium compound, and the effect is similar.

This discovery has been, in our opinion, an important advance, for triethylene melamine can be given by mouth (although it may also be administered intravenously), less frequently produces nausea or vomiting, can be administered to outpatients with ease, and can be given to a patient persistently over periods of several months when the doses are properly spaced.

Various workers [23] have suggested a variety of doses, but all are in agreement that the drug is highly toxic for blood-forming tissues and must be administered with proper circumspection. Also, it has been established by Karnofsky and associates [22b] and others that the material is very reactive with organic molecules and, therefore, must be given with water on an empty stomach. Because of the belief that better absorption is achieved if the acid medium of the stomach is neutralized by administration of 2 gm. of sodium bicarbonate, Gellhorn, Kligerman, and Jaffe [24] follow this regimen.

It is our present custom, although this varies with the individual patient, to administer 5 mg. of the compound with no less than a half glass of water one to two hours before breakfast every other day for three doses. Daily leukocyte counts are made, and the dose may be further separated or omitted if leukopenia is marked, i. e., if the leukocyte count is below 3,000 in most cases or below

2,000 if there is a subnormal count prior to therapy. Then, after a two to three week interval, therapy is resumed, if the leukocyte count permits, with a dose of 5 mg. every week, or rarely twice a week, to 5 mg. every two weeks. It is wise to obtain a leukocyte count before each dose, although we not infrequently omit this after having established high tolerance of the patient for the drug over a period of four to eight weeks with a maintenance dose. Ultimately, however, as with nitrogen mustard, there is a refractoriness to triethylene melamine.

Our results in Hodgkin's disease have been better than those in lymphosarcoma or lymphocytic leukemia, but some response has been noted in certain instances in all three types of disease. We have treated 34 patients, and results have been essentially similar to those reported by others and similar to those obtained with nitrogen mustard. The indications of general systemic disease with constitutional symptoms or failure of response to roentgen therapy are the same as those acceptable for nitrogen mustard therapy.

Nausea and vomiting have been rarely encountered in our cases, and this is a great advantage over experience with nitrogen mustard. Serious toxicity with marked thrombocytopenia, leukopenia, and anemia occurred in a 59-year-old man with intra-abdominal Hodgkin's disease who had had a previous gastric resection for Hodgkin's disease of the stomach. This is the only patient in our series who experienced serious toxicity following use of the drug. Postmortem examination showed no hemorrhage and no lesions of Hodgkin's disease.

However, two young men, aged 32 and 24, died a month apart after triethylene melamine therapy of very extensive miliary tuberculosis. The first patient had had a diagnosis of Hodgkin's disease made in Munich in 1945. He received roentgen therapy in Germany, and he came to us in June of 1950 for swollen lymph nodes in the axillae and groins. He received roentgen therapy intermittently through June of 1951 with repeated benefit. However, by March of 1952, symptoms were more general, with pruritus, and he was given 15 mg. of triethylene melamine in three days and then 5 mg. weekly for four weeks with decided symptomatic improvement, including subsidence of severe back pain that had been associated with vertebral lesions. There was a weight gain of 6 lb. (2,722 gm.). He was advised to take a 5 mg. tablet of triethylene melamine weekly for an additional four weeks: He entered the hospital on May 4, 1952, after the development of high fever a week before with nausea and emesis. Chest roentgenograms showed mediastinal node enlargement and pulmonary infiltration. He received cortisone for 20 days, triethylene melamine in 2.5 mg. doses three times, the last dose the day before death, antibiotics, and two blood transfusions. A febrile course with maximum daily temperature of 101 F to 103 F persisted, and he died June 16, 1952. Postmortem examination showed not only Hodgkin's disease involving the liver, spleen, and mesenteric lymph nodes but also very extensive miliary tuberculosis involving the lungs, spleen, liver, lymph nodes, kidneys, bone marrow, and meninges.

The other patient had been under observation for Hodgkin's disease for 15 months in the hospital and outpatient department. Generally, his course was febrile. Following failure of satisfactory response to roentgen therapy, commencing June 8, he was given four 5 mg. doses of triethylene melamine and three doses of 2.5 mg. of triethylene melamine in a period of six weeks before death. A chest roentgenogram made 42 days before death showed some small patches of density in the lower left lung field. They were also present in a chest film made 40 days previously and were thought to represent foci of Hodgkin's disease. After the first four doses of triethylene melamine and 3,000 cc. of blood in five transfusions, the patient was improved, and superficial lymph node enlargement had largely receded. The temperature elevation recurred to 103 to 104 F, and he had a severe cough. He died on July 18, 1952, and postmortem examination showed not only extensive Hodgkin's sarcoma but also miliary tubercles in the liver and spleen and tubercle bacilli in the lung and kidney with possible miliary tubercles.

We are not in a position to implicate the triethylene melamine as affecting these developments, but for many years we have not seen Hodgkin's disease terminate with tuberculosis, despite Ewing's generally accepted dictum made in 1919 [25] that "in the material as gathered in New York where the disease is very common, tuberculosis follows Hodgkin's disease like a shadow." There is, however, one case reported by Gellhorn and Collins [26] in which miliary tuberculosis developed in a patient who received nitrogen mustard for the treatment of Hodgkin's disease, and it appears desirable to be alert to the possible disadvantage of this chemical therapy.

Although recognizing the great potential toxicity of triethylene melamine and the narrow range of safety, I am quite enthusiastic about this therapy in Hodgkin's disease, lymphocytic leukemia, follicular lymphoblastoma, lymphosarcoma, and to a lesser degree, reticulum cell sarcoma arising in lymph nodes. It appears to be very helpful in some patients without having some of the real disadvantages of nitrogen mustard. Hence, in most situations, I believe that roentgen therapy is best when there is localized disease, as long as it is effective, but that triethylene melamine is the most suitable therapy we have to date for generalized systemic disease, and that, by production of additional remissions after irradiation is ineffective, life is prolonged in many cases.

Recently, two drugs related to triethylene melamine, triethylenephosphoramide and diethylenephosphoramide, have been used in the treatment of malignant diseases, the former in the more recent experiments replacing the triethylenephosphoramide. The reports of Sykes and coworkers [27] and Farber and associates [28] in January, 1953, seem to indicate that the phosphoramides, although occasionally effective in Hodgkin's disease, lymphosarcoma, lymphocytic leukemia, and mycosis fungoides, cause the same manifestations of toxicity for the hemopoietic tissues as do triethylene melamine or nitrogen mustard with no greater therapeutic efficacy. That the triethylenephosphoramide can be given intramuscularly appears to be the only conceivable advantage for a rare patient in whom this route might be a necessity.

CORTICOTROPIN AND CORTISONE

With the introduction of steroid hormone therapy for many other conditions, it is not surprising that corticotropin (ACTH) and cortisone were also used for treatment of the lymphoblastomas. Pearson and Eliel,[29] Stickney, Heck, and Watkins,[30] and Rosenthal and associates [31] have tried this therapy in Hodgkin's disease and the lymphosarcomas, and the effects have mainly been slight and transient, although, according to Rosenthal and associates,[31] occasionally cortisone or corticotropin may be effective when other types of treatment fail. It appears that we may conclude that other available types of therapy generally are more effective than steroid hormone administration.

SURGICAL TREATMENT

The employment of surgical methods for Hodgkin's disease and the lymphosarcomas has been advised in certain circumstances for many years. Yates [32] and Yates and Bunting [33] believed that in the early localized phase of Hodgkin's disease a wide excision of the nodes, followed by roentgen irradiation, was indicated. Their experience suggests that they were, in some instances, successful. Slaughter and Craver [7] have recently discussed this subject. In my experience in over 300 cases, however, I have never seen a case of Hodgkin's disease early enough or sufficiently localized that I thought that surgical excision of the cervical or other lymph nodes was indicated. The situation is different in lymphosarcoma and reticulum cell sarcoma and possibly rarely in follicular lymphoblastoma, where a localized mass may be demonstrated early before there is metastasis to other sites. Then surgical excision is clearly indicated, and I usually advise subsequent roentgen therapy to the affected site.

One patient, a 54-year-old white man, was admitted to the surgical service with respiratory symptoms and roentgenogram findings that suggested a pulmonary neoplasm (fig. 4). Although results of Papanicolaou studies were negative and the bronchogram showed no obstruction, pneumonectomy was done for a supposed carcinoma. Postoperative pathological study showed Hodgkin's granuloma. The patient was seen three months later on April 23, 1953, and was well with still no evidence of superficial node or organ involvement. Not enough time has elapsed, however, for evaluation of this type of treatment, and certainly this is not the indicated treatment for Hodgkin's disease of the lung. Incidentally, Versé [34] has reported that the lung is involved in Hodgkin's disease in 10% of cases. It has been our experience that roentgen therapy for Hodgkin's disease at this site is similar in effectiveness to therapy to other sites.

Surgical treatment is useful in another occasionally observed situation, however, both in Hodgkin's disease and in leukemia, i. e., when a complicating hemolytic process arises. When anemia rapidly recurs in a case of this type and the reticulocyte count is high and the fecal urobilinogen output excessive, cortisone or corticotropin therapy may be tried and found effective. However, if this therapy fails, then splenectomy is indicated, and the results may be very satisfactory, as in the following case.

A 26-year-old white farmer was admitted to the University Hospitals on May 20, 1950. He had noted in the autumn of 1947 "glands" in the right armpit that would reach acorn-size and then get smaller after two or three weeks. In the summer of 1948 enlarged lymph nodes appeared in the neck on the right side. In December, 1949, an acute swelling was noted in the right supraclavicular region, and biopsy from this site was done, with a resultant diagnosis of Hodgkin's disease. Roentgen therapy was administered to the neck and axilla at a local hospital. In the spring of 1950 he noticed fatigue and a rapid heart rate. He was told by his local doctor that his blood count was low, and he was given five transfusions after May 1, achieving from each symptomatic relief for four or five days. In recent weeks he had noted recurrent fever, night sweats, 3 or 4 lb. (about 1,500 gm.) weight loss and yellowness of the sclerae.

Physical examination showed a short man weighing 147 lb. (66.7 kg.) with yellowish, pallid skin and mucous membranes, scar of biopsy in the right supraclavicular region, icteric tint to sclerae, and small, firm, nontender, discrete axillary and inguinal lymph nodes. The liver could be felt 3 cm. and the spleen 2 cm. below the costal margin on deep inspiration.

Results of routine urinalysis were within normal limits. There was a hemoglobin level of 7.75 gm. (Leitz-photoelectric colorimeter), and 2,010,000 erythrocytes. There were 3,500 leukocytes, with 44% neutrophils and 46% lymphocytes. The reticulocyte count was 20%. The blood sugar and nonprotein nitrogen levels were normal. The blood Wassermann reaction was negative and the result of Hanger's cephalin-cholesterol flocculation test was normal. The result of the Coomb's test was positive and the platelet count was 263,000 per cubic millimeter. On biopsy the bone marrow was extremely hyperplastic. The fecal urobilinogen level was 1,000 Ehrlich units per 100 gm. of feces and 609 mg. in a 24 hour specimen. The icterus index was 14.0. The van den Bergh test indicated a total bilirubin level of 1.8 mg. per 100 cc. The fragility of the erythrocytes was normal.

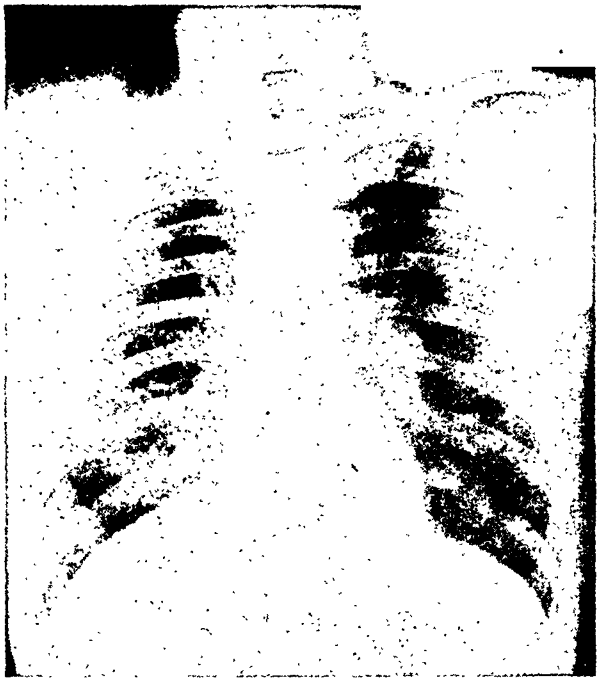

Fig. 4.—Roentgenogram of the chest before surgical intervention. A nodule can be seen in the midfield of the left lung.

Eleven transfusions of 500 cc. of blood were administered, including the last on the day of splenectomy, June 24, 1950, which was performed since it seemed obvious that the patient had a hemolytic anemia. His postoperative course was uneventful, and he left the hospital improved. He was to return in six weeks but did not return until Oct. 26, 1950. He had been completely well in the interval without treatment, and the hemoglobin level was 15.4 gm. There were 4,790,000 erythrocytes. The leukocyte count was 10,950, with 70% neutrophils and 20.5% lymphocytes. Similar levels were maintained for a year thereafter. In September, 1952, however, he had a febrile course and appeared to have recurrence of the hemolytic process. Cortisone administration, roentgen therapy, and treatment with triethylene melamine have had but slight value, and his condition has continued to deteriorate.

It was difficult to maintain suitable hemoglobin and erythrocyte levels in this patient during the original hospital admission because of excessive hemolysis. It appeared to us that this was reversed by the splenectomy; the patient was very much improved, with normal blood levels, and he was able to carry on his work as a farmer for more than a year thereafter.

MISCELLANEOUS MEASURES

There are a variety of other measures for the treatment of Hodgkin's disease and the lymphosarcomas, and they include chicken anti-Hodgkin's-tissue antiserum, which has been used by Utz and Keating [35] and by Pulvertaft,[36] but Barrett and Bone [37] found the reactions severe and occasionally dangerous. The antireticulocytotoxic serum of Bogomoletz has been used, but Hoster and Dratman [8] reported that the results have been poor.

Colchicine therapy has been advised from time to time, since this chemical inhibits mitoses, but it would appear that better therapeutic measures are available. A most recent report concerns four patients treated by Isch-Wall,[38] who, with repeated lymph node punctures, demonstrated a decrease in Sternberg-Reed cells and clinical improvement following the intravenous administration of colchicine.

Aside from the more or less specific therapeutic measures discussed above, it is advisable to give blood transfusions when necessary. Antibiotics should also be administered for treatment of intercurrent infections or prophylactically when indicated in the treatment of any of the lymphoblastomas. Analgesics should be freely administered when required.

Simple measures for the improvement of the patient's general health are too often ignored. Thus, attention to the diet, which should contain 3,000 or more calories, be well rounded, and contain an adequate supply of vitamins, is clearly indicated in all of these cases. Weight gain in some of these patients is of very great value as a morale builder. When anemia is present, which is usually hypochromic or normochromic, administration of iron is desirable; administration of liver extracts and vitamin B_{12} is usually not indicated and, therefore, wasteful.

Of real importance is maintenance of the morale of patients with these malignant diseases over the years. It is a vital part of the physician's job. In discussing the situation with the patient, I tell him that he has a disease of the lymph nodes, and, if pressed, I may speak of it as a tumor of the lymph nodes, the cause of which is unknown. The laity are now so well educated, and so often the patient has had an acquaintance or friend who has died of Hodgkin's disease, that I no longer use that term at the bedside but substitute the name, "lymphogranulomatosis." When it is necessary, I tell the patient that usually a cure is not possible—no more than in diabetes mellitus or pernicious anemia, where insulin or liver extract may have to be given for the rest of the patient's life—but that we can be of help. We advise that we would like to see the patient at certain intervals, and that we can give treatment of one type or another as necessary. A sincere, cheerful, and optimistic attitude in dealing with these patients is of great value. In the meantime, he may carry on his occupation and lead a normal life when he feels well. I have never had reason to believe that the limiting of reasonable activities for these patients when they were free of symptoms was beneficial, and I allow them much freedom.

When pressed to offer a prognosis, as happens in the rare case, I carefully avoid giving any statistics on mortality or even average figures. Many years ago, I had the unfortunate experience of giving average figures to a scientist with aleukemic leukemia. When the time of the cited average figure of two and a half years approached, the patient's morale was extremely bad and he died within a month of the prophesied survival time for the average patient. If, as is rare, I am pushed too hard, I cite the case of a patient whom we followed for 25 years or the case of the boy that I recorded earlier in this paper.

Finally, I freely admit great ignorance about the prognosis in the individual patient with Hodgkin's disease, lymphosarcoma, follicular lymphoblastoma and reticulum cell sarcoma, based on the findings at the time of the initial examination. Ordinarily the best guide is the response to the initial therapy in each case, and then a failure of satisfactory response is much more significant than a good response and it usually means, of course, a poor prognosis.

SUMMARY

Irradiation, triethylene melamine, and nitrogen mustard are usually the most effective therapeutic measures available for Hodgkin's disease, lymphosarcoma, follicular lymphoblastoma, and reticulum cell sarcoma. In most cases irradiation is the therapy of choice for all of them. Occasionally, with extensive systemic disease, nitrogen mustard or triethylene melamine, especially the latter, may be the therapy of choice in Hodgkin's disease; and, generally speaking, these compounds are more effective in the treatment of Hodgkin's disease than in any of the others. Follicular lymphoblastoma is ordinarily more responsive to roentgen therapy than the other three, and the prognosis is usually better. In the average case reticulum cell sarcoma tends to be most resistant, and the prognosis is the poorest, with an average duration of life about two years or less. Important adjuvants in the treatment of these patients include a high calory, well-balanced diet, administration of iron, transfusions as necessary, antibiotics at times, occasionally certain surgical measures, and the maintenance of a good morale by permitting reasonable activity during asymptomatic phases and by avoiding a pessimistic attitude and an ominous or specific prognosis.

The Goal of Medicine.—Research is increasing man's understanding of his powers and is continuing to probe the dark recesses of unexplored territory. Its benefits need to be extended to the common people throughout the world. This becomes a matter of organization and education. The direction which science and its benefits will take depends largely upon the philosophy of medicine. Medical research thrives best in an atmosphere of freedom. The enduring satisfactions are most likely to be attained in a social order that offers the individual the greatest opportunity for self development. Medical research contributes to the quality of human living, the protection of the family, and the enhancement of social progress. The goal of medicine is to enrich human lives. There are men who lift the age in which they live in such a way that all men walk on higher ground.—E. L. Bortz, M.D., Making Life Longer and Better: Medical Potentialities, *Geriatrics,* September, 1953.

SIMULTANEOUS SIGMOIDOSCOPY AND BARIUM ENEMA

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and
Harold G. Jacobson, M.D., Bronx, N. Y.

A critical consideration of diseases of the large colon supports our belief that whenever a barium enema or sigmoidoscopy is indicated for diagnosis, the other is equally desirable. Both procedures have overlapping and supplementary spheres of applicability.

The direct visualization and easy access afforded by the use of the sigmoidoscope is of definitive value. Beyond the view offered by the use of the sigmoidoscope, barium studies with fluoroscopy and roentgenography are necessary. Barium studies of the rectum contribute little to diagnosis.[1] Inflammatory and ulcerative disease of the large colon may, in the early stages, be confined to the rectum. In idiopathic ulcerative colitis, the rectum and lower sigmoid colon are involved in 95% of the cases of this disease. A large percentage, 60 to 75%, of colonic tumors occur in areas of the lower bowel accessible to the sigmoidoscope.[2] Spastic phenomena and functional colitis involving the sigmoid and rectosigmoid areas may be indistinguishable from organic changes when roentgenography exclusively is employed.[3] In any screening program for cancer prevention and cancer detection, the value of sigmoidoscopy alone is undeniable.[4]

It appeared feasible to conduct sigmoidoscopy and barium enema studies at a single session. Eleven persons referred routinely to the radiology department for barium enema studies consented to receive simultaneously a sigmoidoscopy and barium enema. As a result of our experiences the following technique was evolved.

PROCEDURE

The patient is routinely prepared for barium enema by means of laxatives the preceding night and adequate cleansing enemas the morning of the examination. He reports to the x-ray department where the proctologist has made available his portable diagnostic equipment. The pertinent case history is revived by both the radiologist and the proctologist. The patient, after being familiarized with the procedure, assumes the Sims' position on a horizontal fluoroscopy table. The anal area, anal canal, and lower rectum and anatomically related organs are routinely evaluated by means of inspection, digital palpation, and bivalve instrumentation. The proximal-light, 25 cm. sigmoidoscope is then passed the maximal distance feasible. Air inflation is used to ease its passage when needed. The sigmoidoscope should be passed, at least, to the rectosigmoid junction, a distance of 10 to 18 cm. from the anus. In our experience, the sigmoidoscope more frequently can be passed the entire 25 cm. under direct vision (fig. 1). The patient is directed and assisted in turning slowly to a supine position with the sigmoidoscope held lightly in position (fig. 2). The light carrier is removed and replaced by a perforated rubber stopper through which a metal tube is inserted. This metal tube is connected to the barium enema can by means of the customary rubber tube and cutoff valve. The barium is permitted to flow under fluoroscopic control. It flows rapidly with very little discomfort to the patient. A flat plate of the abdomen is taken with the scope and barium in place, while the patient lies immobile on the table (fig. 3). The scope is then removed and the patient positioned according to the requirements of the case (fig. 4). In instances in which the anal sphincter is incompetent, it is particularly helpful to keep the sigmoidoscope in position to avoid premature evacuation of the barium before radiographs are taken. The following case is illustrative.

REPORT OF A CASE

A 33-year-old salesman had an eight year history of chronic idiopathic ulcerative colitis with repeated fluctuations in severity. He had numerous hospital admissions for treatment as a result of these exacerbations. He had been studied repeatedly by means of sigmoidoscopy and contrast enemas and had understandably become resistant to further examinations. He was quite amenable to the suggestion that combining the two pro-

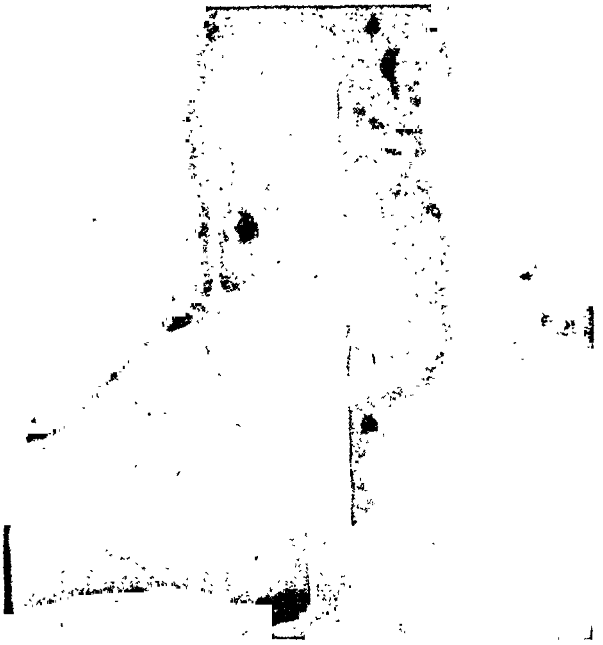

Fig. 1.—With the sigmoidoscope passed 25 cm., its relation to the skeletal structures is apparent.

From the medical and radiology services of the Veterans Administration Hospital, Bronx, N. Y.

1. Levene, G., and Vele, N. C.: The Inadequacy of Routine Barium Enemas for the Roentgenologic Examination of the Rectum, Am. J. Digest. Dis. 18: 175-181 (June) 1951.

2. Bockus, H. L., and others: Gastro-Enterology, vol. 3, Small and Large Intestine and Peritoneum, Philadelphia, W. B. Saunders Company, 1944, p. 438.

3. Bockus, H. L., and others,[2] p. 491.

4. Runyeon, F. C.: Sigmoidoscopy: Its Clinical Importance to the Practitioner, J. A. M. A. 147: 913-914 (Nov. 3) 1951.

cedures would reduce his discomfort. After the combined procedure was completed, he expressed great satisfaction at the ease with which it was performed and the minimal discomfort to himself. The findings were as follows. The large colon from cecum to anus was narrowed and shortened and showed mucous membrane roughening and loss of haustral markings. Clearly pictured on the roentgenograms were numerous punched-out negative shadows characteristic of polyps in the sigmoid and upper rectal areas. The sigmoidoscope was passed 20 cm. into the lower sigmoid and the abnormalities definitely evaluated. The mucous membrane was diffusely thickened and edematous, with pale, thick scarring throughout. The membrane was friable to trauma, though no active ulcerations were apparent. Many sessile polypoid excrescences of varied sizes were scattered about. The chronic inflammatory indurative process distorted the crypts and columns in the anal canal and caused multiple fissuring of the crypts and anal skin. The study was a success both technically and administratively in expediting the patient's physical examination.

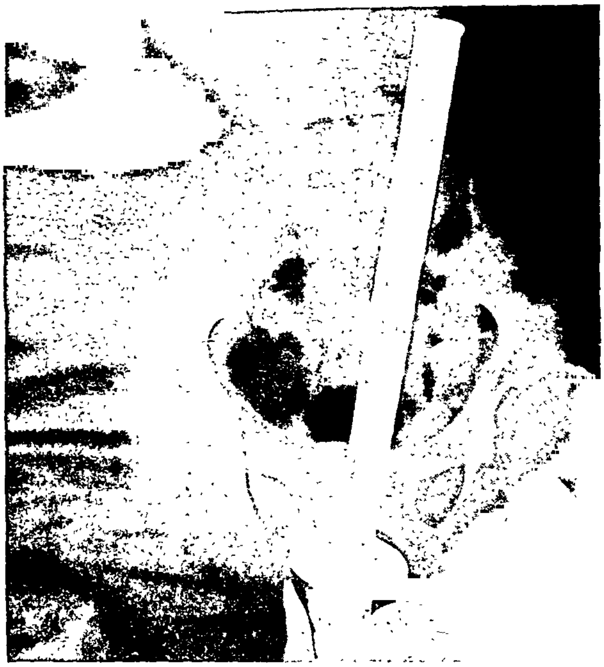

Fig. 2.—Sigmoidoscope in same position as in figure 1; anteroposterior view taken after rotation of patient into supine position. Excess air present in rectum and sigmoid soon evacuates.

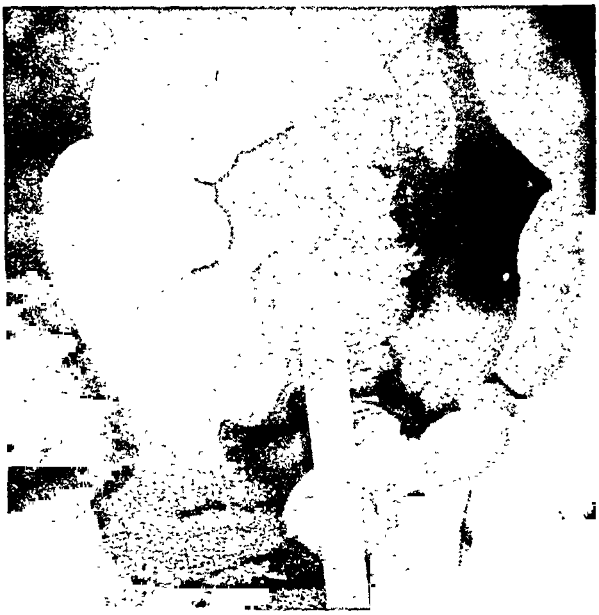

Fig. 3.—Appearance after entire colon is filled with barium instilled through the sigmoidoscope. The instrument in this case passed just beyond the rectosigmoid junction.

COMMENT

The advantages of the simultaneous procedure are many. Two procedures essential for complete diagnosis are accomplished at one session, and the delay attendant on two separate appointments is avoided. Mutual consultation at the time of examination permits special studies and refinements of technique. The preparation of the patient for both examinations is usually the same. By combining both procedures, a single preparation reduces the patient's discomfort. Sigmoidoscopy does not interfere with the barium enema. In fact, the barium enema is facilitated by the passage of the sigmoidoscope past the rectosigmoid junction. Since the barium enema passes through the tube directly into the lower sigmoid, distention of the rectum is avoided, and so a painful and strong evacuatory reflex is much less likely to be experienced by the patient. The discomfort of the combined procedure is less than the total discomfort of two separate examinations.

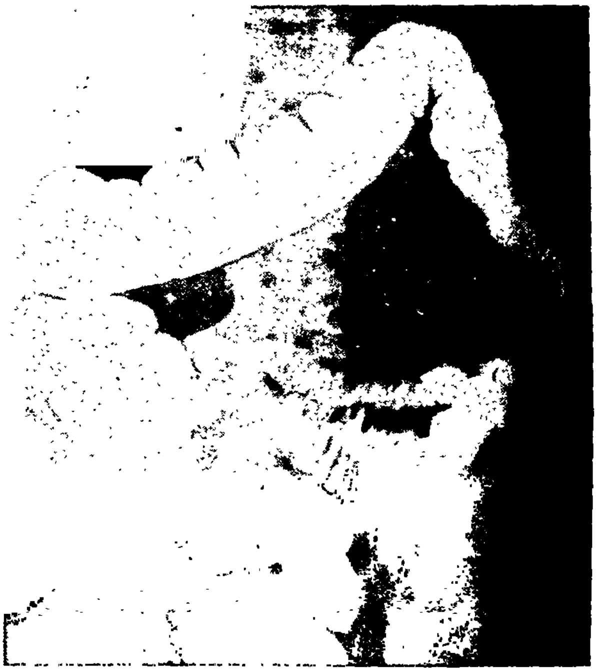

Fig. 4.—The same as shown in figure 3 but with the sigmoidoscope removed permitting the barium mixture to enter the rectum.

A possible disadvantage is the greater time devoted to the combined examination. We feel, however, that the advantages mentioned above would outweigh this factor. The bypassing of the rectum and lower sigmoid when the barium is instilled through the sigmoidoscope interferes with fluoroscopic visualization. This loss is offset by the fact that these regions have already been inspected under direct vision and that, after the removal of the sigmoidoscope, barium fills these areas and permits adequate radiographic studies. In our experience, air used to ease the passage of the sigmoidoscope has not interfered with examination. There is a possible hazard to the patient in moving from the Sims' position to the supine position with the sigmoidoscope in place. Careful sigmoidoscopy and the great mobility of the lower sigmoid colon reduces this danger to negligible proportions. Biopsies should not be attempted during the combined procedure. This measure is best delayed until the total large bowel findings are known, for this knowledge would determine what further diagnostic measures are indicated.

SUMMARY AND CONCLUSIONS

The value of both sigmoidoscopy and barium enema is presented. It is suggested that whenever one is indicated the other is also desirable. The technique of the combined procedure is presented as a practical measure in the diagnostic investigation of large colon disease.

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INCARCERATED AND STRANGULATED INGUINAL HERNIA IN INFANTS: A PREVENTABLE RISK

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and
Allan G. Thompson, M.D., Montreal, Canada

In 1940 Dr. William E. Ladd summarized his many years of experience with inguinal hernias in infants and children and indicated that in the absence of intercurrent disease he had operated on these young patients at any age they came to him and had no reason to regret this policy.[1] Today this forthright plan is not sufficiently widely practiced, and the incarcerated and strangulated inguinal hernia is still one of the commonest causes of intestinal obstruction in infancy. In the interest of gaining more widespread and enthusiastic support for the early surgical cure of ruptures in infants and children, a study has been made of 940 patients with indirect inguinal hernia, 69 of whom had irreducible incarceration or strangulation when they came for treatment.

A small infant with imperfect obliteration of the processus vaginalis at the internal inguinal ring presents one of the commonest abnormalities of early life. Two per cent of full-term infants and up to 25% of viable premature infants may be so afflicted.[2] The optimum management of such a patient, therefore, constitutes a problem common to physicians, who must, in the best interest of their patient, choose between immediate surgical treatment and so-called conservative or truss management.

The yarn truss served its purpose well in an era when the morbidity and mortality of elective surgery in infants was high. While it is useful as an interim measure, truss treatment not only has failed to provide a permanent cure but does not protect the patient from the serious complications of the defect for which it was specifically designed. In addition, one cannot wholly disregard the fact that anxious parents are being called on to endure the vagrancies of truss treatment with all its attendant nuisances. The small patient is subjected to the chafing and limited activity associated with a snugly applied truss and to the innumerable episodes of minor incarcerations that reduce spontaneously but are certainly not painless nor harmless episodes. The physician may find himself fidgeting unhappily with a few strands of white woolen yarn while he waits for his small charge to attain a suitable size for surgical treatment. The morbidity to all concerned, both in the home and in the office, far outweighs that of patients actually admitted to the hospitals for an operation that is now widely available, and when skillfully executed is simple with dangers reduced to a minimum.

CLINICAL SUMMARY

There have been 940 patients subjected to herniorrhaphy for indirect inguinal hernia at the Children's Hospital during the seven year period from January, 1946, to January, 1952 (table 1). Of these, 134, or approximately 14%, of the children were admitted because of the presence of an incarcerated or strangulated hernia. Fortunately, in 65 instances a spontaneous reduction could be achieved in the emergency room, or within a short period after admission to the hospital, by using sedation, deep Trendelenburg position, cold packs, and

TABLE 1.—*Summary of Cases of Indirect Inguinal Hernia*

	Number
Total cases	940
Incarcerated or strangulated at time of admission	134
Reduced spontaneously after admission	65
Required emergency operation	69

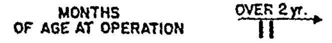

Fig. 1.—Age range of patients with irreducible incarceration or strangulation of indirect inguinal hernia.

Associate Professor of Pediatric Surgery, Ohio State University College of Medicine, and Attending Surgeon, the Children's Hospital (Dr. Clatworthy), and formerly, Resident Surgeon, the Children's Hospital (Dr. Thompson).

[1] Ladd, W. E.: Hernia in Infancy and Childhood, Nebraska M. J. 26:235, 1941.

[2] Hess, J. H.: Physical and Mental Growth of Prematurely Born Children, Chicago, University of Chicago Press, 1934, pp. 449, 424.

the gentlest of taxis. The remaining 69, or approximately 7%, of these patients were of necessity subjected to an emergency herniorrhaphy because of irreducible incarceration, strangulation, and in most instances, clinical or radiographic evidence of intestinal obstruction.

Thus, in this group of 69 cases the operation itself was done as a lifesaving procedure, the patients already having experienced the most serious complication of their disorder. Of particular importance is the fact that more than half of these patients were previously known to have a hernia and had received no treatment, or were actually wearing a truss. Some had even suffered previous episodes of incarceration that required reduction by a physician.

The age range of these patients is of particular interest since 39 of these 69 were less than 6 months of age, 19 additional patients were less than 2 years of age, and only 11 were between the ages of 2 and 15 years (fig. 1). Sixty-six of the patients were boys and only three were girls. Incarceration of an ovary in a female infant has been reported previously[3] and occurred in two of the three patients in this group. The right side was involved 64 times, and the left side was involved five times. Other authors have reported a similar right side involvement in 75 to 80% of their patients.[4]

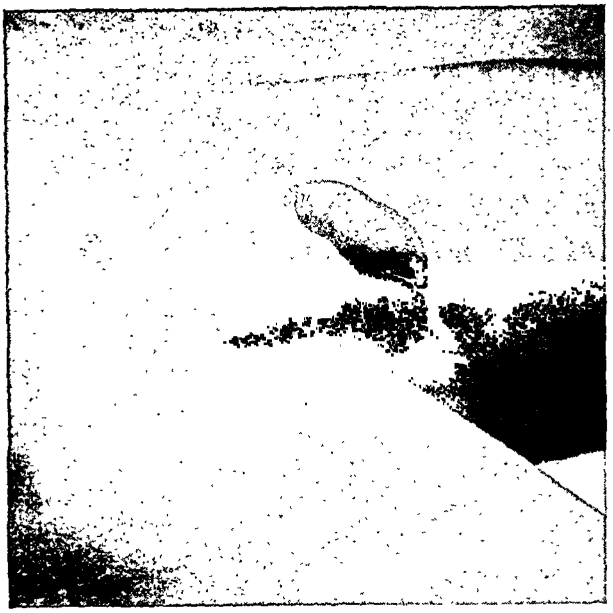

Fig. 2.—Three-year-old Negro child with three day history of vomiting and abdominal pain. The tense, inguinal mass in such an older child is unmistakable. In well-nourished infants, however, it may be obscured by fat and readily overlooked.

Symptoms and Signs.—The common symptom complex was irritability, apparent pain, and vomiting. These were present in 46 of the 69 patients. Obstipation for 24 hours or more occurred in at least seven instances, and gross blood was present in the stool of two patients at the time of admission. The average duration of the incarceration or strangulation, as judged from the onset of symptoms, was 16 hours. The mean duration was 12 hours.

On examination at the time of admission, a lump or mass was present in the inguinal or scrotal region of each patient (fig. 2). This mass was usually somewhat tender and often surrounded by edema and reddening of the overlying skin. In several instances, however, it was movable, nontender, and readily transilluminable, so that the differential diagnosis between a symptomatic tense hydrocele and an incarcerated hernia should be decided at the operating table. Examination of the testes was usually recorded as normal, but in some instances it was swollen and hard. This is a point of some diagnostic aid, since such signs are manifestations of venous engorge-

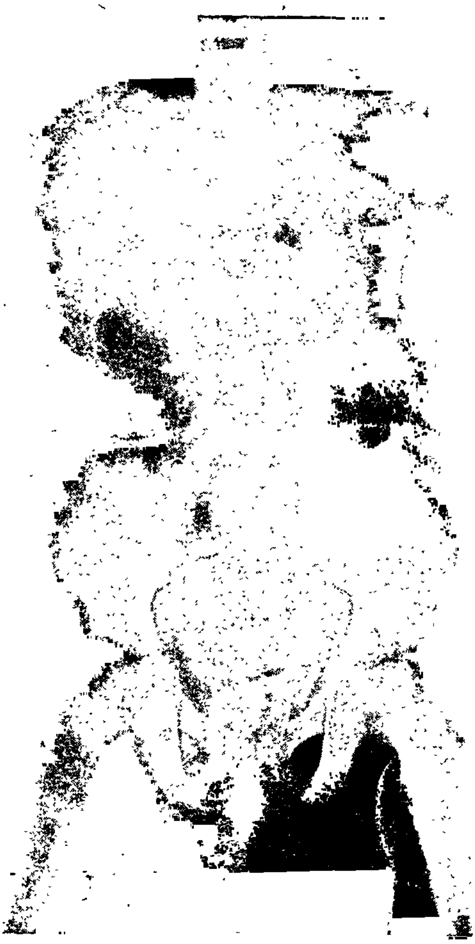

Fig. 3.—Roentgenogram showing the dilated stepladder appearance of high-grade mechanical obstruction due to strangulated right inguinal hernia. Gas shadows are visible in the inguinal canal and upper scrotum.

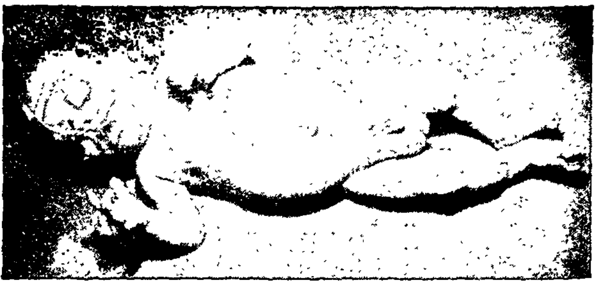

Fig. 4.—Three-week-old premature infant with 10 hour history of colicky pain and vomiting bile-stained material. Bilateral scrotal swellings had been noted six days previously. Note nasal tube for gastric suction and the polyethylene catheter properly placed in the right saphenous vein.

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[3] Schiebel, H. M.: Inguinal Hernia in 3-Month-Old Infant Containing Adnexa, J. Pediat. 36: 646, 1950.

[4] Thorndike, A., Jr., and Ferguson, C. F.: Incarcerated Inguinal Hernia in Infancy, Am. J. Surg. 39: 429, 1938.

ment due to obstruction of the spermatic veins and lymphatic channels at the internal ring by the tightly strangulated mass.

X-Ray Findings.—Abdominal distention, tympany, and borborygmi were commonly present, and, when the abdomen was studied by roentgen examination, the findings were often those of a high grade of small bowel obstruction. Frequently, gas and fluid levels could be seen within the confines of the inguinal canal and scrotum as well as throughout the abdominal cavity (fig. 3).

Laboratory Findings.—The routine laboratory findings were of little importance except in the evaluation of a severely dehydrated and acidotic infant. The white blood cell counts ranged from 4,600 to 21,000 and were elevated above 10,000 in 40 of our 69 patients at the time of admission. However, there did not seem to be any absolute correlation between the high leukocyte counts and the state or degree of vascular damage suffered by the entrapped bowel described at the operation.

MODE OF THERAPY

The management of the infant prior to surgery varied considerably and was dependent on the condition of the patient and the judgment of the surgeon. All patients were treated as surgical problems, and preoperative studies and preparations for surgery were initiated at the time of admission. As this study progressed, it became apparent that there were no instances of serious damage to the blood supply of the bowel in patients who had had symptoms for less than four hours. Therefore, when a reliable history, as far as time was concerned, could be obtained and the physical findings were consistent with the history, an effort was made to achieve a spontaneous reduction of the hernia with sedation, Trendelenburg position, and gentle taxis. There were no deaths or serious morbidity associated with such a procedure when this four hour rule was used. Indeed, it was our experience that any hernia that reduced spontaneously with morphine and Trendelenburg position, but without taxis was most certainly viable regardless of how long the patient appeared to have been suffering from his incarceration. If such a reduction could be obtained, it seemed highly desirable, since certainly such patients were poorly prepared for surgery and it would serve their interest better to achieve a spontaneous reduction and to carry out an elective herniorrhaphy a day or two later.

If the hernia did not reduce within one hour or if, in the judgment of the surgeon, nonoperative reduction was contraindicated, the patient was prepared for surgery. Gastric suction was instituted and continued throughout the operative and precarious postoperative period. An appropriate needle, or if necessary, a more reliable small bore polyethylene tube was inserted into a peripheral vein for the administration of fluid, electrolytes, blood, and chemotherapeutic and antibiotic agents (fig. 4). These important steps not only provided for the preparation of the patient for surgery but also proved to be important safety factors designed to avoid aspiration of retained gastric contents during anesthesia and to render a reliable means of administering fluids and blood during a deliberate surgical procedure that occasionally included a bowel resection. Atropine was administered routinely, and sedation was given when indicated in older infants and children.

The Operation.—Open drop vinyl ether and oxygen anesthesia was commonly employed. Local infiltration of 1% procaine hydrochloride (Novocaine) or 0.5% Zylcaine (local anesthetic product containing procaine, butesin, and benzyl alcohol in purified peanut oil) was rarely relied on. Recently, endotracheal intubation has been practiced and in experienced hands has proved eminently satisfactory. There have been no anesthetic fatalities.

The surgical incision was in most cases the conventional oblique herniotomy incision, although the transverse skin-fold incision also provided adequate exposure and is now preferred by most surgeons. After incising the fascia of the external oblique, an effort was made to gently tease apart the cremasteric and spermatic muscles and fascias and open the hernial sac. This permitted the surgeon, in most instances, to deliver the incarcerated mass, to inspect it, and to assure himself that the bowel was viable before returning it to the general abdominal cavity. In 35 of the 69 patients there was indisputable gross evidence of strangulation of the entrapped bowel. Cyanosis, edema, and ecchymosis of the bowel wall and the mesentery and straw-colored peritoneal fluid were noted in 20 of the patients. Deep red to black discoloration of the bowel wall and serosanguineous peritoneal fluid were found in 11 instances. In four babies an involved ileum and/or ileocecal area were noted to be badly damaged or probably gangrenous when first inspected. After enlarging the internal ring and thus relieving the constricting pressure, however, the appearance of the bowel improved sufficiently so that only one intestinal resection was deemed necessary.

After consideration of the hernial content the hernial sac was removed and the neck of the peritoneal sac closed at the internal ring. The method of repair of the inguinal canal and the choice of suture material varied. In most instances a simple approximation of the fascia of the external oblique or a modified Ferguson repair, as advocated by Ladd and Gross, was relied on.[5] Care was taken not to close the external ring tightly, because postoperative edema of the cord structures was anticipated. In no instance was the cord transplanted.

MORTALITY AND MORBIDITY

The only mortality in this series of 940 cases was that of a 3-month-old, 6 lb. (2,721 gm.) premature infant with a 48 hour history of intestinal obstruction. He succumbed to peritonitis following the perforation of a necrotic portion of the terminal ileum on the fourth postoperative day. The hospital morbidity was rather high, and the average period of hospitalization varied from four to seven days for the 54 patients that underwent emergency herniorrhaphy, compared with the usual two or three days for those subjected to elective herniorrhaphy (table 2). In two instances prolonged melena and signs of peritoneal irritation complicated the postoperative course and were presumed to have resulted from a sloughing and ulceration of the mucosa and perhaps a portion of the wall of previously strangulated bowel. Ileus with distention and intermittent vomiting that required prolonged periods of gastric suction were present in 12 patients. Bronchopneumonia, presumably due to aspirated intestinal contents, occurred three times in patients in whom gastric suction was not insisted on. The postoperative course was frequently associated with temperature elevations for 24 to 48 hours or more.

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[5] Ladd, W. E., and Gross, R. E.: Abdominal Surgery of Infancy and Childhood, Philadelphia, W. B. Saunders Company, 1941.

COMPLICATIONS

In addition to the immediate hospital morbidity there have been serious late complications, including testicular atrophy and recurrent hernia (table 2). We have become particularly interested in testicular damage and have noted it at the operating table in three patients. In two instances a black swollen testis was biopsied and a decompressive capsulotomy performed with the hope of immediately improving the circulation to the parenchyma. The biopsy specimens were consistent with complete necrosis, and atrophy subsequently followed. There have been three additional patients in whom atrophy was not noted until some weeks or months later, making a total of 5 of 69 patients in whom testicular atrophy, presumably due to necrosis following strangulation of the testis, occurred as a complication of strangulated hernia.

TABLE 2.—*Morbidity and Late Complications of Irreducibly Incarcerated or Strangulated Indirect Inguinal Hernia*

	Number
Total cases	69
Prolonged hospitalization	54
Postoperative intestinal complications	12
Infarcted or atrophic testicle	5
Recurrent hernia	4

Although one would anticipate a postoperative recurrence rate in children subjected to elective herniorrhaphy to be less than 1%,[7a] the recurrence rate in these children on whom the herniorrhaphy was performed at the time of the strangulation has been 6%. In four patients a second operation was thus required before a satisfactory result was finally achieved.

COMMENT

Intestinal obstruction is the most serious complication of indirect inguinal hernia in infants and children. It is by no means the only one. Infarction and atrophy of the testis, an increased incidence of recurrence of the hernia, serious postoperative intestinal complications, and prolonged expensive hospitalization cannot be disregarded. All, however, are secondary to the incarceration and, in the majority of instances, to strangulation of a loop of bowel within the hernial sac in the first few months of the patient's life. The combined case mortality and morbidity is considerable. In most instances this morbidity and mortality is preventable by a simple, elective hernia operation done as soon as the diagnosis of inguinal hernia is established. Such a plan has long been accepted in established pediatric clinics in the British Isles [6] and more recently in this country.[7] In this series of 881 elective inguinal herniorrhaphies there have been no deaths and the average hospitalization varied from two to three days.

Thus, here is an opportunity for physicians who recognize the value of preventive medicine in reducing morbidity and mortality to recommend preventive surgery as well. One should seriously question the judgment of expectant or truss treatment of the inguinal hernia in an infant. A permanent cure from such management is practically unknown, and the hope for it is no longer justified. We must elect to strike at this disability before it is permitted to run its course of complications. Only intercurrent infection or concomitant abnormalities should interfere with the elective surgical repair of hernias in infants. Professional and hospital facilities are becoming widely available to deal successfully with this elective surgery in the diminutive patient. The operation can be a simple one, the risk is minimal, and the morbidity is slight. The results are most gratifying to patient, parents, and physician alike.

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[6] Herzfield, G.: Hernia in Infancy, Am. J. Surg. 39: 422, 1938.

[7] (*a*) Gross, R. E.: The Surgery of Infancy and Childhood, Philadelphia, W. B. Saunders Company, 1953. (*b*) Potts, W. J.; Riker, W. L., and Lewis, J. E.: Treatment of Inguinal Hernia in Infants and Children, Ann. Surg. 132: 566, 1950. Koop, C. E. (Children's Hospital of Philadelphia): personal communication to the authors. Swenson, O.: Inguinal Hernia and Hydrocele, 21st Annual Meeting, symposium, American Academy of Pediatrics, 1952.

Calcaneal Spurs.—Spurs on the os calcis are quite common, being seen most frequently on the plantar surface more toward the medial side than the lateral side. Less frequently, spur formation is noted on the posterosuperior portion of the os calcis. The spur on the plantar surface produces symptoms more frequently than those on the posterior surface. A diagnosis can usually be made clinically, but x-ray confirmation is required before any form of treatment is instituted.... At the time of the patient's initial visit the foot should be strapped in slight supination, thus changing the point of weight bearing on the os calcis. On the following visit, about one week later, a plaster mold is taken of the patient's foot, and a so-called spur foot plate made for insertion into the shoe. This plate is similar to the metal plate worn for flat or weak foot with the center of the metal portion of the heel cut out, thus eliminating weight upon the painful area. The rim of the excavation is lined with foam rubber, increasing the depth of the depression, and the entire plate is covered with leather. The patient should be referred to the laboratory for complete blood count, urine analysis, sedimentation rate, and blood uric acid determination. Any abnormalities found, which could possibly be contributing factors to the etiology, should be treated accordingly. If the above form of treatment fails to give relief, it may be necessary to remove the spur surgically under general anesthesia. The approach is usually through a linear incision on the medial border of the foot, giving adequate exposure to remove the spur with a mallet and chisel. Postoperative care consists of abstinence from weight bearing for a period of four to eight weeks. No plaster immobilization is required.—H. C. Fett, M.D., Orthopedic Management of Foot Disorders, *Surgical Clinics of North America*, October, 1953.

CONGENITAL PULMONARY STENOSIS

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Congenital pulmonic stenosis may be defined as consisting of structural changes in the subpulmonary tract, the pulmonic valve, or the pulmonary trunk that result in a gradient between the systolic pressure in the right ventricle and that in the pulmonary artery. From a developmental point of view, the valvular type of pulmonic stenosis may be the outcome of fetal endocarditis of the pulmonary cusps [1] or, as Gross has suggested, the result of maldevelopment of the arteries that supply the valves, with consequent infarction and fibrosis.[2] There is agreement on the embryology of infundibular stenosis; the idea of Keith is usually accepted that infundibular stenosis is due to an arrest of the normal involution of the bulbus cordis, which should form a part of the right ventricle by the end of the second month.[3]

ANATOMIC AND PHYSIOLOGICAL FACTORS

Anatomically, pulmonic stenosis usually is not an isolated malformation. As illustrated in table 1, it frequently exists together with other defects. The type of associated malformations influences the physiological pattern and, therefore, the surgical correction of the stenosis. Table 1 illustrates that when pulmonary stenosis is associated with a ventricular septal defect, the stenosis is usually of the infundibular type. Rarely is infundibular stenosis associated with a closed ventricular septum.[4] In the presence of an auricular defect, the stenosis is usually at the pulmonic valve.[5] There may be associated narrowing of the right ventricular outflow tract.[6] If there is neither an auricular or ventricular septal defect, the stenosis is usually at the pulmonic valve (fusion of valves). When there is overriding of the aorta, such as in the tetralogy of Fallot, the infundibular type of stenosis prevails; however, valvular stenosis, either alone or combined with the infundibular type, is frequently found in the tetralogy of Fallot (table 2).[7]

Because of the great importance of the type of stenosis, a more detailed description of what is meant by infundibular or valvular stenosis appears to be indicated. The anatomy of infundibular or subpulmonary stenosis has been described in detail by Mayer, Stoelker, Kussmaul, and others.[8] Recently, Edwards has summarized this problem in detail.[6] The subpulmonary tract is bounded by the right ventricle, by the ventricular septum, and by a muscle that separates the tract from the ventricular septal defect (fig. 1). This latter muscle is the crista supraventricularis. This subpulmonary tract, at times, may be very narrow (infundibular stenosis). It can be straight or slightly curved. There is no doubt that the subpulmonary tract plays an important role in obstructing the blood flow into the pulmonary artery. Johns, Williams, and Blalock, for example, believe it to be the primary source of obstruction in the infundibular type.[9] Brock, on the other hand, while admitting that the infundibulum is often hypoplastic, maintains that, as a rule, its effective lumen is adequate and that the actual stenosis occurs at one level within it and is linear and diaphragmatic.[7b] In addition to the narrowed outflow tract, therefore, there is a secondary, more complete stenosis similar to the one described by Keith.[3] This difference in interpretation of anatomic data is of considerable interest. If the subpulmonary tract has an effective lumen and if the stenosis is linear, infundibulotomy with dilatation may be practical; however, if the stenosis is a long narrow channel, this procedure is hardly adequate. One of us (W. R.) investigated the morbid anatomy of the subpulmonary tract by preparing paraffin casts of the cardiac cavities according to a technique patterned after the method of Hiffelsheim and Robin.[10] These casts permit good visualization of the relationship of the cardiac chamber and are particularly valuable in the estimation of the diameter of the subpulmonary tract including the stenosis that occurs within this narrowed chamber. Although the morbid anatomy of each individual heart with infundibular stenosis varies, some general statements may be made. Figure 2 represents a drawing showing the reverted funnel-shaped entrance into the subpulmonary tract of the right ventricle. In figure 3 the subpulmonary tract is opened, demonstrating that, in addition to the narrowing of this tract, resulting from hypertrophy of the muscle of its posterior wall, producing muscular stenosis there is also a secondary stenosis that is linear and diaphragmatic and that is composed of fibrous rather than muscular tissue. A similar pattern was found in most of the 25 specimens that we examined. In one case, this fibrous stenosis was absent (fig. 4). This specimen was from a child with fibroelastosis of the left auricle and ventricle.

A comparison of the narrowing in the subpulmonary tract caused by the fibrous stenosis and the muscular stenosis is of importance to the surgeon. If the fibrous stenosis is the main impediment to flow, infundibulotomy with dilatation may suffice. This may be possible in children in whom, according to Brock, the fibrous stenosis is the predominant obstruction fixing the ventricular walls and preventing their proper developments as the heart grows.[11] It is, therefore, not surprising that infundibulotomy has had good results in children.[12] In the adult, however, little can be accomplished by cutting this fibrous stenosis. The reason for this statement is illustrated in figure 5, which represents a photograph of a paraffin cast of the cardiac chambers of a heart with the tetralogy of

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Fallot. There is little difference in the internal diameter of the subpulmonary tract at the fibrous stenosis or caudal to it. Whether infundibular resection is able to overcome these difficulties with the removal of a mass of muscular tissue of the subpulmonary tract is still a controversial question. It is our impression, however, that frequently the effective lumen of the muscular stenosis is inadequate and that a great deal of muscle must be removed to widen the passageway.

The morbid anatomy of the subpulmonary tract in valvular pulmonic stenosis is different. Figure 6, which represents a paraffin cast of the cardiac cavities of a heart with valvular pulmonic stenosis and auricular septal defect, illustrates that, although muscular hypertrophy may exist, this does not result in the narrowing of the right ventricular outflow tract. It is not surprising, therefore, that valvulotomy is the operation of choice in this malformation.

In pulmonary stenosis without any associated septal defect, neither a right-to-left nor left-to-right shunt is present (fig. 7). Consequently, the arterial oxygen saturation is normal, and there is no appreciable gradient in oxygen content of blood from the venae cavae and the pulmonary artery.[13] When there is an auricular defect or a patent foramen ovale, the right auricular pressure exceeds that in the left during the whole cardiac cycle.[14] This results in an intracardiac right-to-left shunt, with reduced oxygen saturation of arterial blood and cyanosis (fig. 8). In the tetralogy of Fallot, the overriding aorta, together with the narrow subpulmonary tract determine the course of the circulation. The intracardiac shunt is predominantly from right to left, and the right ventricular pressure is elevated above the pulmonary artery pressure (fig. 9).[15] The degree of overriding is of surgical importance. Taussig has stated that all of 17 patients, in whom the aorta overrode the ventricular septum by more than 50%, died at, or shortly after, operation, from acute pulmonary edema or severe pulmonary congestion.[16] With extreme dextroposition of the aorta, the left ventricle cannot discharge the increased amount of blood which is shunted through the lung by means of the artificial ductus. As a result the residual volume in the left auricle and ventricle increases and pulmonary congestion develops. On the other hand, the construction of an artificial ductus leads to right-sided failure in the presence of pulmonary stenosis associated with an auricular septal defect. The rise in left auricular pressure associated with increased inflow load results in a diminution of the pressure gradient from the right to the left auricle; the right auricular pressure rises, leading to elevated venous pressure and right-sided failure.

The clinical and radiological findings in pulmonic stenosis are the outcome of the morbid anatomy and physiopathology. The presence of cyanosis will depend on the existence of a right-to-left shunt. This is usually present when the stenosis is associated with an auricular or ventricular septal defect and when the aorta overrides. In cases of isolated valvular pulmonic stenosis without either ventricular or auricular defect, cyanosis is absent, except in the terminal stages of the disease. Since the pressure and flow in the pulmonary artery are diminished, radiological examination will reveal clear lung fields.[17] When the stenosis is at the valve, poststenotic dilatation of the pulmonary artery is usually present. The heart is larger than in the tetralogy of Fallot and a high systolic murmur and thrill are usually present. The maximal intensity of the murmur is in the second or first intercostal space to the left of the sternum. The clinical and radiological findings in pulmonic stenosis with auricular defect are similar, except for the presence of cyanosis resulting from a right-to-left shunt.[13] A left-to-right shunt is entirely absent. There is a poststenotic dilatation and the maximal intensity of the murmur is higher than in the tetralogy of Fallot.

In the tetralogy of Fallot, the heart is small, there is a convexity in the region of the pulmonary artery segment, and the lung fields are clear.[17] Since the right-to-left shunt predominates, cyanosis is present. Because the stenosis is usually low in the subpulmonary tract and possibly combined with fusion of the valve, a visible poststenotic dilatation of the pulmonary artery is usually absent. There is instead an infundibular chamber that represents the space between the fibrous stenosis and the pulmonary valve.

Reference was made in the preceding paragraphs to the important role played by anatomic and physiological factors in selecting operative procedures for the treatment of pulmonic stenosis. The success of surgical treatment can be objectively evaluated by clinical and physiological studies; however, either of these methods of evaluation alone can be misleading. Wishful thinking too often colors clinical judgment. On the other hand, physiological findings, objective as they are, mean little if they are not paralleled by clinical impressions.

There is no doubt that valvulotomy is the method of choice in the treatment of isolated pulmonic stenosis or in valvular pulmonic stenosis accompanied by an auricular septal defect. The anatomic and physiological rationale for this operation has been discussed. The clinical improvement following this procedure is undisputed.[18] The physiological changes following this operation have been described by Soulié and associates.[5a] These authors mentioned a fall in right auricular pressure following valvulotomy in five out of nine patients. The right ventricular pressure diminished; the decline was quite rapid following operation but tended to become slower as time progressed. In two patients, the right ventricular pressure fell below that in the left ventricle. Pulmonary artery pressures rose slightly without ever approaching the pressure in the right ventricle. The configuration of the pressure in the pulmonary artery approached normal. Changes in pulmonary flow were inconsistent, but usually the right-to-left shunt diminished slightly.[5a]

CLINICAL OBSERVATIONS

Physiological data collected on patients studied at the Johns Hopkins Hospital show a similar trend (table 3). Of 10 patients studied, 4 had isolated valvular stenosis. In the remainder there was an associated auricular defect. The right ventricular pressure fell in all but one patient and pulmonary blood flow increased in 8 out of 10 patients in whom it was recorded. The peripheral oxygen saturation rose in all patients with auricular septal defect.

The clinical results following the construction of an artificial ductus in patients with the tetralogy of Fallot have been described in detail by Taussig.[16] The mortality at six months after operation was 16%. Cardiac failure, as well as subacute bacterial endocarditis, were infrequent complications. The result of the operation seemed to depend somewhat on the age of the patient, and the best results were obtained in the age group from 5 to 15 years. The failure of most hearts to enlarge after the construction of an artificial ductus needs special comment, because the operation increases left ventricular load. Data, to be published, indicate a postoperative rise in oxygen tension of the coronary vein indicating an increase in the myocardial oxygen tension. It is possible that this factor has a part in the postoperative adjustment of the heart.

Tables 4 and 5 illustrate the physiological data obtained during the preoperative and postoperative periods on patients with the tetralogy of Fallot. In all patients an artificial ductus was created by Dr. A. Blalock at Johns Hopkins Hospital. The oxygen content of the blood from the right auricle fell in all but three of 14 patients after operation (table 2). This fall in oxygen content was probably the result of a decrease in oxygen capacity of the blood after operation. For this reason, one might also expect a decline in the oxygen content of the blood from the right ventricle; however, this occurred only in 7 out of 14 patients (table 4). In the remainder the oxygen content of the blood of the right ventricle either rose or remained at its preoperative level. It is conceivable that the rise of oxygen content in the right ventricle is due to increased intracardiac left-to-right shunting. Such a shunt might also be responsible for the elevation in right ventricular pressure, which was observed in five out of nine patients (table 5). In all patients but one, the ratio of effective pulmonary flow to systemic flow increased postoperatively, and the peripheral oxygen saturation rose. In most instances there was a fall in the net right-to-left shunt and an increase in the net left-to-right shunt (table 4).

Physiological data obtained before and after infundibular resection in the tetralogy of Fallot are still scarce; however, Bailey and Glover used the infundibular resection in 42 patients with the tetralogy of Fallot; 22 had infundibular stenosis.[10] In patients who were catheterized postoperatively, there were still marked changes in the gradient between the systolic pressures in the right ventricle and the pulmonary artery; however, the clinical results were, for the most part, satisfactory and even dramatic. It is hoped that future physiological studies will justify some of the optimism evoked by these clinical observations.

SUMMARY

The anatomic and physiological findings in congenital pulmonary stenosis are described, and their implications for surgical treatment are discussed.

The finding of Brock confirmed that, in infundibular stenosis, narrowing of the subpulmonary tract results from muscular and fibrous obstruction. Paraffin casts of the cardiac chambers showed that, in infundibular stenosis, muscular structures are primarily responsible for the narrowing of the subpulmonary tract. The fibrous, diaphragmatic stenosis contributed only little to further narrowing of the right ventricular outflow tract. In valvular pulmonic stenosis, there was no narrowing of the subpulmonary tract despite the existence of muscular hypertrophy. In pulmonary stenosis without associated septal defect, no intracardiac shunts were present. In pulmonary stenosis with auricular defect or in the tetralogy of Fallot, the shunt was predominantly from right to left. Pressures in the right ventricle were elevated in these malformations. Valvulotomy, performed in patients with valvular pulmonic stenosis, was followed by a fall of pressure in the right ventricle and increased pulmonary blood flow. After construction of an artificial ductus in patients with tetralogy of Fallot, the oxygen content of the blood of the right auricle diminished. Evidence of increased left-to-right intracardiac shunt was obtained from increased oxygen content of the blood from the right ventricle and from elevated pressures in the right ventricle.

DEFECTS OF THE CARDIAC SEPTUMS

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A decade ago our knowledge of congenital heart disease was based primarily on the morphology of the malformations and on empirical observations permitting the establishment of clinical patterns and criteria for diagnosis, such as characteristic auscultatory findings, specific electrocardiographic changes and roentgenographic configurations. The recently introduced methods of investigation, such as cardiac catheterization, angiocardiography, and oximetry, permitted a more direct insight into the dynamic alterations that were brought about in these remarkable experiments of nature and thereby helped to place the diagnostic approach to congenital cardiac disease on a more comprehensive and rational basis.

Although the clinical syndromes associated with defects of the ventricular septum and of the atrial septum were recognized a long time ago, a diagnosis of septal defect was in the past considered acceptable because of the many similarities between the two types of septal defects. Recently, however, it became more and more evident that a communication between the low-pressure atria has an entirely different effect upon the circulation than that between the high-pressure ventricles. Furthermore, the promise of availability of a direct surgical attack upon the problem of septal repair justifies a meticulous differential diagnosis between the two types of septal defects. The purpose of this presentation is to summarize the various features of the clinical syndromes associated with defects of the cardiac septums and to attempt the establishment of a basis for the selection of cases for the surgical repair of the defects. The discussion is limited to defects of the atrial and ventricular septums unassociated with other congenital malformations.

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DEFECT OF THE ATRIAL SEPTUM

The term atrial septal defect usually means developmental error in the formation of the atrial septum and does not include the very common incomplete sealing of the foramen ovale. Defects of the atrial septum show a very wide range in size, shape, and position. Multiple defects are not uncommon. The size of the defect varies from a widely patent foramen ovale unprotected by the valve, which may measure 1 cm. in diameter or more, to a very large defect, 5 to 6 cm. in diameter, in which case there is virtually a common chamber combining both atria. Actually, the trilocular heart with a single atrium can be considered a variant of the simple atrial septal defect, since one finds all degrees of transition between the two malformations and the dynamic changes in a large atrial septal defect are similar to those in a single atrium.

Under normal conditions, pressures in the atria are low throughout the cardiac cycle but the pressure in the left atrium is slightly higher than in the right; thus, in the presence of an interatrial communication there exists a slight left-to-right pressure gradient. Another factor that contributes to the flow of blood from the left atrium to the right one is the resistance to diastolic filling, which is greater in the left ventricle than the right. The basic dynamic alteration in blood flow in cases of defects of atrial septum is thus a left-to-right shunt through the defect. In moderate and large-sized defects, the shunts reach considerable magnitude, so that the flow through the pulmonary circuit is considerably increased, while the flow through the greater circulation is decreased. Observations made in cases of atrial septal defects have suggested some exceedingly large pulmonary flows, several hundred per cent above normal. Since the resistance to flow through the pulmonary circulation is very low and adaptable, this large flow may be accommodated with little or no increase in pulmonary arterial pressure. Inasmuch as pulmonary arterial pressure depends not only on the peripheral resistance in the pulmonary circuit but also on the magnitude of flow, moderate pulmonary hypertension may appear in cases of elevated pulmonary flow without materially altering the pulmonary arteriolar resistance. Occasionally, however, true pulmonary hypertension is found in conjunction with atrial septal defect as evidenced by marked elevation of the resistance. Such an elevation of pulmonary arteriolar resistance is usually considered a complication rather than a direct effect of the large pulmonary flow.

In the majority of cases the flow through the interatrial defect is unidirectional, so that blood from the pulmonary vein that is fully oxygenated flows into the right atrium and elevates the oxygen saturation of the mixed blood that perfuses the right heart and the pulmonary circulation, while the blood in the systemic arteries remains fully saturated. Occasionally anoxemia of the blood of the systemic arteries is found, and in about 8% of the patients it is severe enough to cause chronic cyanosis. Such a reversal of the shunt through the interatrial defect can be caused by a number of circumstances; for example, increased resistance to diastolic filling in the right ventricle immediately reverses interatrial shunt. This is best shown experimentally and clinically in cases in which an atrial septal defect coexists with pulmonary stenosis. When the atrial septal defect is the only malformation, reversal of flow may occur with the development of pulmonary hypertension. In cases in which the defect is so large that a virtual three-chambered heart exists, free mixing may take place without basic alteration of dynamics. Thus, pulmonary blood flow may be very large and systemic flow small, since the bulk of the flow through the defect is from left to right; yet enough contamination of blood entering the left atrium of the heart with caval blood takes place that anoxemia and even frank cyanosis exist. Finally, it has been speculated that in cases in which anoxemia is present but in which neither pulmonary hypertension nor a very large defect is found, a fetal-like jet of inferior caval blood thrown across the interatrial foramen during some part of the cardiac cycle may be the cause of cyanosis.[1]

While cardiac murmurs constitute a major aid in diagnosis of congenital heart disease, they are not helpful in the diagnosis of atrial septal defects. Loud systolic murmurs at the middle and lower left sternal border are frequently encountered, but soft and nondescript precordial murmurs are also often found. Occasionally murmurs are absent. Apical diastolic mitral-like murmurs are also frequently noted while early diastolic basal murmurs are sometimes heard, possibly resulting from insufficiency of the pulmonic valve coincidental with dilatation of the pulmonary arterial root.

Most of the clinical features of atrial septal defects are the direct results of the dynamic alterations brought on by the defect. The decreased systemic flow found in larger atrial septal defects leads to two sequelae: (1) small size of the aorta and (2) retardation of bodily growth. Both of these features are fairly characteristic for this lesion, especially the roentgenographic evidence for a hypoplastic aorta.

The striking increase in pulmonary blood flow leads to two important consequences: (1) the dilatation and hypertrophy of the right ventricle and (2) the dilatation of pulmonary artery and branches frequently associated with exaggerated pulsations and with intense pulmonary congestion. As a result of these features one finds a hyperdynamic cardiac impulse, bulging of the right anterior hemithorax, and accentuated pulmonic second sound. The electrocardiogram reveals the characteristic incomplete or complete right bundle branch block or, occasionally, pattern of right ventricular hypertrophy. The roentgenogram shows enlargement of the right side of the heart with the typical dilatation of pulmonary arterial branches and pulmonary congestion.

The following summary exemplifies the findings in an average case of atrial septal defect. A 21-year-old man had few symptoms and only moderate limitation of activities. Physical examination revealed a moderately loud systolic murmur along the left sternal border and a loud pulmonic second sound. Chest roentgenograms showed moderate cardiac enlargement, dilatation of the pulmonary artery with large, pulsating branches, and increased vascularity of the lungs. The electrocardiogram showed an incomplete right bundle branch block. The patient's blood pressure was 105/70 mm. Hg.

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[1] Selzer, A., and Lewis, A. E.: The Occurrence of Chronic Cyanosis in Cases of Atrial Septal Defect, Am. J. M. Sc. **218**: 516 (Nov.) 1949.

The intracardiac pressures were: right ventricle, 28/6 mm. Hg; pulmonary artery, 23/10 mm. Hg; and right atrium, 3 mm. Hg. The oxygen contents of the blood samples were: superior vena cava, 158 cc. per liter; inferior vena cava, 161 cc. per liter; right atrium, right ventricle, and pulmonary artery, 187 to 192 cc. per liter; and femoral artery, 219 cc. per liter (94% saturation). The approximate volumes of the blood flows were: systemic, 4.1 liters per minute; pulmonary, 11.3 liters per minute; and left-to-right shunt, 7.2 liters per minute.

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DEFECT OF THE VENTRICULAR SEPTUM

In contrast to atrial septal defects, congenital interventricular communications show relatively little variation in size and are almost always located in the same area. Unlike atrial septal defects they appear oftener in combination with other congenital malformations than as isolated lesions. The ventricular septal defect is in essence a persistent interventricular foramen which is normally present in a stage of fetal life and the location of which is clearly visible in the normal human heart as the membranous septum. It has been shown [3] that at least 90% of the isolated ventricular septal defects and virtually all such defects occurring in combined malformations of the heart are located in the region of the membranous septum. The remaining ventricular septal defects are openings due to imperfection of the formation of the muscular septum, which may be located in various parts of the septum. Such defects are usually small and appear to play a minor part as a cause of circulatory disturbances. It is probable that because of their location within the contracting cardiac muscle such defects decrease in size or even close during systole, while during diastole there is no significant pressure difference between the ventricles. Thus, the ventricular septal defects of clinical importance are primarily those located in the membranous septum, and there is no proper reason for the frequent use of the adjective high in connection with them.

It should be pointed out that the upper portion of the ventricular septum has a spiral course whereby the aortic root may come in contact with both ventricular cavities and assume a physiologically overriding position when the upper part of the membranous septum is absent. Thus, Eisenmenger's complex consisting of a large ventricular septal defect and a dextroposition of the aortic root is morphologically identical with or very similar to the uncomplicated large ventricular septal defect, except for those instances with high degree of dextroposition of the aorta in which half or more of the aortic root is located over the right ventricle. Because of this difficulty in separating morphologically these two syndromes, it has been suggested by us [4] that a distinction be made between them on clinical grounds, based on the degree of anoxemia. This concept has been accepted by others, while some authors have completely abandoned the term Eisenmenger's complex.

The typical ventricular septal defect located at, or in front of, the membranous septum, varies in size from 0.2 to about 3 cm. in diameter. A large ventricular septal defect involves most of the area usually occupied by the membranous septum that is located immediately underneath the aortic valves and opens into the right ventricle in the region of the tricuspid valve. Such defects are sometimes crescent-shaped or triangular rather than the usual round or oval shape. For reasons to be discussed in detail we propose a division of such defects into "large" and "small," with the former measuring between 1.5 and 3 cm. in diameter and the latter smaller than 1.5 cm. It should be emphasized, however, that even the

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DEFECT OF THE ATRIAL SEPTUM

The term atrial septal defect usually means developmental error in the formation of the atrial septum and does not include the very common incomplete sealing of the foramen ovale. Defects of the atrial septum show a very wide range in size, shape, and position. Multiple defects are not uncommon. The size of the defect varies from a widely patent foramen ovale unprotected by the valve, which may measure 1 cm. in diameter or more, to a very large defect, 5 to 6 cm. in diameter, in which case there is virtually a common chamber combining both atria. Actually, the trilocular heart with a single atrium can be considered a variant of the simple atrial septal defect, since one finds all degrees of transition between the two malformations and the dynamic changes in a large atrial septal defect are similar to those in a single atrium.

Under normal conditions, pressures in the atria are low throughout the cardiac cycle but the pressure in the left atrium is slightly higher than in the right; thus, in the presence of an interatrial communication there exists a slight left-to-right pressure gradient. Another factor that contributes to the flow of blood from the left atrium to the right one is the resistance to diastolic filling, which is greater in the left ventricle than the right. The basic dynamic alteration in blood flow in cases of defects of atrial septum is thus a left-to-right shunt through the defect. In moderate and large-sized defects, the shunts reach considerable magnitude, so that the flow through the pulmonary circuit is considerably increased, while the flow through the greater circulation is decreased. Observations made in cases of atrial septal defects have suggested some exceedingly large pulmonary flows, several hundred per cent above normal. Since the resistance to flow through the pulmonary circulation is very low and adaptable, this large flow may be accommodated with little or no increase in pulmonary arterial pressure. Inasmuch as pulmonary arterial pressure depends not only on the peripheral resistance in the pulmonary circuit but also on the magnitude of flow, moderate pulmonary hypertension may appear in cases of elevated pulmonary flow without materially altering the pulmonary arteriolar resistance. Occasionally, however, true pulmonary hypertension is found in conjunction with atrial septal defect as evidenced by marked elevation of the resistance. Such an elevation of pulmonary arteriolar resistance is usually considered a complication rather than a direct effect of the large pulmonary flow.

In the majority of cases the flow through the interatrial defect is unidirectional, so that blood from the pulmonary vein that is fully oxygenated flows into the right atrium and elevates the oxygen saturation of the mixed blood that perfuses the right heart and the pulmonary circulation, while the blood in the systemic arteries remains fully saturated. Occasionally anoxemia of the blood of the systemic arteries is found, and in about 8% of the patients it is severe enough to cause chronic cyanosis. Such a reversal of the shunt through the interatrial defect can be caused by a number of circumstances; for example, increased resistance to diastolic filling in the right ventricle immediately reverses interatrial shunt. This is best shown experimentally and clinically in cases in which an atrial septal defect coexists with pulmonary stenosis. When the atrial septal defect is the only malformation, reversal of flow may occur with the development of pulmonary hypertension. In cases in which the defect is so large that a virtual three-chambered heart exists, free mixing may take place without basic alteration of dynamics. Thus, pulmonary blood flow may be very large and systemic flow small, since the bulk of the flow through the defect is from left to right; yet enough contamination of blood entering the left atrium of the heart with caval blood takes place that anoxemia and even frank cyanosis exist. Finally, it has been speculated that in cases in which anoxemia is present but in which neither pulmonary hypertension nor a very large defect is found, a fetal-like jet of inferior caval blood thrown across the interatrial foramen during some part of the cardiac cycle may be the cause of cyanosis.[1]

While cardiac murmurs constitute a major aid in diagnosis of congenital heart disease, they are not helpful in the diagnosis of atrial septal defects. Loud systolic murmurs at the middle and lower left sternal border are frequently encountered, but soft and nondescript precordial murmurs are also often found. Occasionally murmurs are absent. Apical diastolic mitral-like murmurs are also frequently noted while early diastolic basal murmurs are sometimes heard, possibly resulting from insufficiency of the pulmonic valve coincidental with dilatation of the pulmonary arterial root.

Most of the clinical features of atrial septal defects are the direct results of the dynamic alterations brought on by the defect. The decreased systemic flow found in larger atrial septal defects leads to two sequelae: (1) small size of the aorta and (2) retardation of bodily growth. Both of these features are fairly characteristic for this lesion, especially the roentgenographic evidence for a hypoplastic aorta.

The striking increase in pulmonary blood flow leads to two important consequences: (1) the dilatation and hypertrophy of the right ventricle and (2) the dilatation of pulmonary artery and branches frequently associated with exaggerated pulsations and with intense pulmonary congestion. As a result of these features one finds a hyperdynamic cardiac impulse, bulging of the right anterior hemithorax, and accentuated pulmonic second sound. The electrocardiogram reveals the characteristic incomplete or complete right bundle branch block or, occasionally, pattern of right ventricular hypertrophy. The roentgenogram shows enlargement of the right side of the heart with the typical dilatation of pulmonary arterial branches and pulmonary congestion.

The following summary exemplifies the findings in an average case of atrial septal defect. A 21-year-old man had few symptoms and only moderate limitation of activities. Physical examination revealed a moderately loud systolic murmur along the left sternal border and a loud pulmonic second sound. Chest roentgenograms showed moderate cardiac enlargement, dilatation of the pulmonary artery with large, pulsating branches, and increased vascularity of the lungs. The electrocardiogram showed an incomplete right bundle branch block. The patient's blood pressure was 105/70 mm. Hg.

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[2] Nadas, A. S., and Alimurung, M. M.: Apical Diastolic Murmurs in Congenital Heart Disease: The Rarity of Lutembacher's Syndrome, Am. Heart J. 43: 691 (May) 1952.

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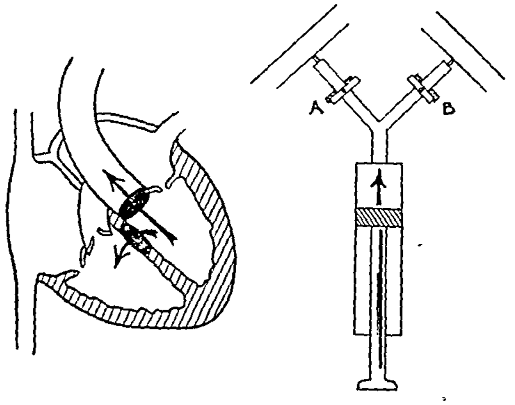
The atrial septum separates two low-pressure chambers with a very slight pressure differential between them while the interventricular septum separates a high-pressure chamber from a low-pressure chamber with a systolic pressure differential of over 100 mm. Hg. A communication between the ventricles, therefore, has a much more profound dynamic effect than one between the atria. A ventricular septal defect creates a situation that is termed double-outlet ventricle [4] in which the left ventricle can pump the blood through two outlets. The figure presents this situation diagrammatically and also shows, for comparison, an ordinary air pump that has a bifurcated outlet. If the outlets are connected to two tires, the pump will inflate both tires to an equal extent when clamps *A* and *B* are fully open or are constricted to equal extent. If, however, clamp *A* is constricted more so that it offers twice as much resistance to air flow as clamp *B*, twice as much air is directed to tire *B* as tire *A*. The air flow then can be regulated to each side, since it stands in inverse proportion to the respective resistances offered by the clamps. This double-outlet pump creates a situation similar to the one existing in the left ventricle in the presence of a ventricular septal defect. The right ventricle with pressure only one-fifth as high as the left provides an outlet of low resistance, while the aortic orifice provides an outlet of high resistance. Thus, if a large ventricular septal defect were suddenly created in the normal heart, most of the blood, probably four-fifths of the output, would enter the right ventricle, and only the small remainder would enter the aorta. Such an occurrence can be prevented by one of two factors: (1) the small size of the opening, which would limit the flow through the defect, or (2) an elevation of pressure (i. e., resistance) within the right ventricle.



Comparison of a heart with large ventricular defect and an air pump, showing how the left ventricle acts as a double-outlet pump.

The question of the relationship of the size of the opening to the flow through it cannot be answered authoritatively, because physiological studies with autopsy correlation of such cases are not available. One can draw some tentative conclusions, however, from an analogy of this situation to that of constricted cardiac orifices. It is well known that a constriction of the aortic or pulmonary orifice has no significant dynamic effects until the opening is constricted to about one-half of its original size. At this point, the proximal pressure rises and the distal pressure falls, the differential between them pointing to a resistance to flow. On the basis of these observations, it seems reasonable to suppose that an interventricular defect smaller than one-half of the aortic orifice offers enough resistance to flow to maintain a pressure differential between the ventricles, whereby a normal or almost normal pressure relationship between them may be preserved. Since in the adult human heart the average diameter of the aortic orifice measures between 2.5 and 3 cm., it can be assumed that ventricular septal defects smaller than 1.5 cm. in diameter are likely to be consistent with the maintenance of an adequate systemic blood flow without disrupting the basic pressure relationship in the cardiac chambers.

Defects larger than 1.5 cm. in diameter are apt to be associated with elevated pressure within the right ventricle, for if adequate systemic circulation is to be maintained, the resistance in the right side of the heart must be elevated. This increased resistance can be brought about by a lesion within the right ventricle, such as tight pulmonary stenosis; however, in uncomplicated ventricular septal defects, increased resistance in the right ventricle can be brought about only by high resistance in the pulmonary arterioles. This elevated resistance in the pulmonary arterioles can be shown by the equal pressure in both ventricles, a direct calculation of pulmonary arteriolar resistance by available formulas, and the finding of characteristic changes in the intima and media of the pulmonary arterioles. The cause of such an elevation of resistance within the pulmonary circuit is unknown, although it had been suggested that it is present since birth and is presumed to originate by some adaptive process during the neonatal period when a transition from fetal to postnatal circulation usually takes place.

In the presence of equal pressure within the ventricles, a left-to-right shunt may take place and the blood flows from the left to the right ventricle or a right-to-left shunt may occur and, because of the position of the defect, right ventricular blood is pumped directly into the aorta. The direction of the shunt primarily depends on the respective resistances within the periphery of the systemic and pulmonary circulations.

In the foregoing discussion it was emphasized that in smaller defects normal pressure relationship between the two ventricles may be maintained, whereas in larger ones the relationship is disturbed by the fact that right ventricular pressure must rise to the level of that within the left ventricle. This basic difference between the two types of ventricular septal defects affects not only hemodynamics but also the clinical pattern and prognosis; therefore, it is suggested that these fundamental dynamic differences be taken into account in classifying ventricular septal defects. The following classification of ventricular septal defects is proposed.

Classification of Ventricular Septal Defects

1. Small defect permitting pressure differential between ventricles
    - *a.* with clinically insignificant shunt
    - *b.* with a large left-to-right shunt
2. Large defect with equalized pressure in the ventricles
    - *a.* with a predominant left-to-right shunt
    - *b.* with mixed shunt and arterial anoxemia (Eisenmenger's complex)

Small Defects.—Lesions with a small shunt are characterized by a very loud systolic murmur typically located at the lower left sternal border, virtually unassociated with any other cardiac abnormality. This loud murmur and thrill found in patients without cardiac enlargement and with no visible disturbance of cardiac function was noted about 75 years ago by Roger and frequently bears his name. In more modern terms one finds the exquisitely prominent Roger murmur in patients who have a normal cardiovascular shadow in the roentgenogram, a normal electrocardiogram, and no ill effects or undesirable sequelae of the defect with the sole exception of a relatively high susceptibility to bacterial endocarditis. In such cases even cardiac catheterization may not provide diagnostic clues, for shunts of less than 20% of the total cardiac output are ordinarily not recognizable by an increase in oxygen contents in the appropriate chamber, so that only occasionally can such a diagnosis be proved by a fortuitous passage of the catheter through the defect into the aorta. It is estimated that defects in this category are smaller than 0.5 cm. in diameter (in the adult heart).

A small ventricular septal defect with an insignificant shunt (class 1*a*) is exemplified by the following summary. A 19-year-old boy had no symptoms. On examination there was a loud systolic murmur and thrill at the lower left border of the sternum. Chest roentgenogram and electrocardiogram were normal. The patient's blood pressure was 120/75 mm. Hg. The intracardiac pressures were: right ventricle, 18/3 mm. Hg, and pulmonary artery, 17/7 mm. Hg. The oxygen contents of the blood samples were 139 to 144 cc. per liter in the superior vena cava, right atrium, lower part of the right ventricle, and pulmonary artery. One sample from the upper part of the right ventricle contained 151 cc. per liter. The blood of the femoral artery was 95% saturated. The cardiac output was 6.2 liters per minute. Thus, except for the murmur, all findings were in the limits of normal. Although cardiac catheterization was not diagnostic it was consistent with this diagnosis.

Small ventricular septal defects with a large shunt constitute a sizeable group of cases in which the interventricular communication is small enough to permit the maintenance of a pressure differential between ventricles and yet draws large quantities of blood into the lesser circulation. This syndrome is presumed to be caused by septal defects, 0.5 to 1.5 cm. in diameter. In view of the high pressure within the left ventricle during systole it is not surprising that this relatively small opening permits such a large left-to-right shunt. The clinical features of the defects that fall into this category are very similar to those of the atrial septal defect. With the essential physiological disturbance of a very large pulmonary blood flow and a small systemic flow, one finds on physical examination in addition to the characteristic murmur, an accentuated second pulmonic sound and the precordial heave characteristic of right ventricular hypertrophy. Electrocardiogram may show the pattern of right ventricular hypertrophy or a right-sided conduction defect although evidence of left ventricular hypertrophy may also be present. The roentgenogram shows enlargement of the right heart or of both ventricles, a hypoplastic aorta, the large plmonary artery with enlarged branches that frequently show exaggerated pulsations and the intense pulmonary vascularity of the lungs. It is seen that the only difference between the large atrial septal defect and the ventricular septal defect of this class is the frequent additional findings of left ventricular hypertrophy and dilatation in the latter cases. Its absence in atrial defects is readily understandable, since the large volume of blood that is pumped into the pulmonary circulation completely bypasses the left ventricle in the atrial septal defect. It should be noted that Wood [5] attaches considerable diagnostic significance to left ventricular hypertrophy in ventricular septal defects that he considers primarily left-sided cardiac lesions. This view, however, has not found wide confirmation, and, in our experience, while left ventricular enlargement may also be present, right ventricular enlargement is the rule.

Cardiac catheterization of patients with defects in this group reveals higher oxygen contents of samples from the upper right ventricle and pulmonary artery than those from the atrium. Occasionally, however, even cardiac catheterization may not dispel the difficulty in differentiating this form of ventricular septal defect from atrial septal defect, for poor mixing and laminated flow in the right heart may make it difficult to determine the point at which highly oxygenated blood enters the right heart. Pressure measurement in cases of this group show normal or moderately elevated systolic pressures in the right ventricle and the pulmonary artery. The calculation of left-to-right shunt through the ventricular septal defect frequently reveals flow as large as those found in the largest atrial septal defects.

An example of small ventricular septal defect with a large left-to-right shunt (class 1*b*) is presented in a case of an 8-year-old girl, who had no limitation of activities. Physical examination showed a loud systolic murmur and thrill at the left fourth costal cartilage. Chest roentgenogram showed severe cardiac enlargement with a very prominent pulmonary artery bulge, large pulmonary arterial branches and intense pulmonary congestion. The electrocardiogram showed a pattern of right ventricular hypertrophy. The patient's blood pressure was 95/60 mm. Hg. The intracardiac pressures were: right ventricle,

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[5] Wood, P.: Congenital Heart Disease: A Review of Its Clinical Aspects in the Light of Experience Gained by Means of Modern Techniques, Brit. M. J. 2:639 (Sept. 16) 1950; 2:693 (Sept. 23) 1950.

43/0 mm. Hg; pulmonary artery, 45/8 mm. Hg; and right atrium, 2 mm. Hg. The oxygen contents of the blood samples were: 113 to 117 cc. per liter in the inferior vena cava, superior vena cava, and right atrium and 145 to 153 cc. per liter in the right ventricle and pulmonary artery. The femoral artery was 93% saturated. The approximate volumes of the blood flow were: systemic, 2.25 liters per minute; pulmonary, 6.65 liters per minute; and left-to-right shunt, 4.4 liters per minute.

Large Defects.—As already pointed out, defects about 1.5 to 3 cm. in diameter present the dynamic problem of a double-outlet left ventricle and lead to severe pulmonary hypertension, which dominates the clinical picture. In such cases there may be either normal oxygen saturation of arterial blood or anoxemia. As pointed out above, it is believed that the aortic root in its normal position physiologically overrides a large ventricular septal defect, and, therefore, Eisenmenger's complex merges inconspicuously with the large ventricular septal defect, both morphologically and functionally. Since the actual position of the aortic root in large ventricular septal defects merely facilitates mixing and the entry of caval blood into the aorta but the direction and quantity of flow depend upon the respective resistances within the pulmonary and systemic circuits, the clinician cannot distinguish the anoxemic form of the ventricular septal defect from Eisenmenger's complex with a true anatomic dextroposition of the aorta. Only in rare cases in which severe cyanosis is present from birth, is one justified in suspecting a congenital extreme dextroposition of the aorta. The usual cases, in which there are milder degree of anoxemia and relatively late onset of cyanosis can be referred to as instances of Eisenmenger's complex, with the understanding that this term is used in a physiological sense rather than in a morphological one.

Thus, the two varieties of large ventricular septal defect, the plain and the anoxemic, show in most respects identical clinical features. A loud systolic murmur is present as in all ventricular septal defects. Early diastolic pulmonary murmurs are rather common. The signs of severe pulmonary hypertension include a very loud pulmonic second sound that is palpable as a diastolic shock, diffuse precordial heave with anterior bulge of the left hemithorax, electrocardiographic evidence of severe right ventricular hypertrophy, roentgenographic evidence of right ventricular enlargement, and striking prominence of the pulmonary artery and its branches. The roentgenographic appearance of the dilatation of the pulmonary vessels associated with pulmonary hypertension is similar to the one reported previously in connection with large pulmonary flow. Frequently, however, a differentiation between the two can be made on inspection of the plain film, because, in hypertension of the pulmonary circuit, dilatation extends only into medium-sized pulmonary branches and often ends abruptly and leaves the periphery of the lung fields radiolucent, with little vascularity. On the other hand, dilated pulmonary arterial branches due to a large pulmonary flow extend into the smallest branches so that the entire lung field is intensely congested.

The large ventricular septal defect with a predominant left-to-right shunt (class 2*a*) is exemplified by the case of a 20-year-old girl with only slight limitation of activities. Physical examination revealed a moderately loud systolic murmur along the left border of the sternum and a very loud pulmonic second sound. Chest roentgenogram showed slight cardiac enlargement with a very prominent pulmonary artery shadow, large pulmonary artery branches but no increased pulmonary vascularity in the periphery. The electrocardiogram showed a pattern of severe right ventricle hypertrophy. The patient's blood pressure was 107/61 mm. Hg. The intracardiac pressures were: right ventricle, 103/7 mm. Hg; pulmonary artery, 103/62 mm. Hg; and right atrium, 3 mm. Hg. The oxygen contents of the blood samples were 137 to 143 cc. per liter in the inferior vena cava, superior vena cava, right atrium, and the lower part of the right ventricle, 154 to 159 cc. per liter in the upper part of the right ventricle and the pulmonary artery, and 186 cc. per liter (91% saturation) in the femoral artery. The approximate volumes of the blood flows were: systemic, 4.3 liters per minute; pulmonary, 5.4 liters per minute; left-to-right shunt, 1.8 liters per minute; and right-to-left shunt, 0.7 liter per minute.

The anoxemic form of a large ventricular septal defect (class 2*b*) presents an identical clinical picture, but, in addition, lowered arterial oxygen saturation, visible cyanosis, clubbing of digits, and polycythemia are present. In this group of defects, cardiac catheterization shows the characteristic equalization of systolic pressure within both ventricles and both arterial trunks. The higher oxygen contents of right ventricular blood samples usually demonstrate the defect; however, calculations of the shunt point to the fact that it is usually much smaller than the defects of group 1*b* and the pulmonary flow is either normal or slightly elevated, and may even be decreased. The oxygen saturation of the systemic arterial blood determines whether a given case belongs in category *a* or *b*. Since arterial saturation is sometimes normal at rest but abnormally low on exercise, it may be difficult at times to classify borderline cases.

Diagnosis in typical cases can usually be suspected on clinical grounds; however, diagnostic difficulties occasionally have to be clarified by the uses of special techniques. A small ventricular septal defect with an insignificant shunt is frequently confused with a milder degree of "pure" pulmonary stenosis. Small defects with large flows resemble atrial septal defects and usually have to be differentiated by means of cardiac catheterization. Large ventricular septal defects have to be differentiated with all other conditions associated with pulmonary hypertension. The one finding that is highly suggestive of a large ventricular septal defect is an equal systolic pressure in the right ventricle and the aorta or a systemic artery.

The prognosis of the ventricular septal defect depends mostly on the degree of hemodynamic disturbances caused by it. Thus, in small ventricular septal defects with insignificant shunts the prognosis is excellent, and the life expectancy would be normal if it were not for the susceptibility to bacterial infection of the defect. Other forms of the ventricular septal defect have a prognosis related to the degree of hemodynamic changes. In the majority of cases, cardiac insufficiency develops within the early and middle adult life.

The most important complication of the ventricular septal defect is subacute bacterial endocarditis. The high susceptibility to bacterial infection is indicated by the fact that it is developed in 25% or more of the cases. Other complications found in large ventricular defect include severe pulmonary arteriolar changes resembling those found in systemic arterioles in malignant hypertension. In such cases pulmonary hemorrhages are common and may assume alarming proportions.

INDICATIONS FOR SURGICAL INTERVENTION

It has been emphasized throughout the discussion that the term septal defect applies to a series of syndromes with a great span and variation of the degrees of hemodynamic changes, of cardiac difficulties, and of prognosis; therefore, the urgency and need for a surgical correction of the defects does not appear to be the same in the various syndromes. It appears to us that surgical correction would be most helpful in those cases in which the entire disability is caused by a large left-to-right shunt and no complicating and secondary factors are present. This would include the larger atrial septal defects without pulmonary hypertension and the small ventricular septal defect with a large shunt (class 1*b*). In such cases a successful closure of the septal defect constitutes as complete a cure of the condition as the ligation of a ductus arteriosus.

The small ventricular septal defect with an insignificant shunt (class 1*a*) produces no important cardiac changes and little prospect of cardiac disability. In this syndrome, surgical intervention will be justified only if and when the safety of the operation is so high that the mortality figures fall below the rather slim probability of death from therapy-resistant bacterial endocarditis.

The decision of surgical intervention in cases of large ventricular septal defect and in atrial septal defects complicated by severe pulmonary hypertension presents considerable difficulty. While the ventricular septal defect initiated the severe pulmonary arteriolar changes in the first case and the atrial septal defect may have contributed to them in the second instance, such changes are not likely to be reversible. The question of whether surgical intervention should be considered at all seems to depend on the dynamics of the lesion, namely, the direction of the predominant blood shunt. If the predominant flow through the defect is from left to right, surgical closure of the defect may be contemplated with the understanding, however, that a major disability resulting from pulmonary hypertension is likely to persist. On the other hand, in cases in which a predominant right-to-left flow indicates that the resistance in the pulmonary circuit is higher than in the systemic circuit, closure of the defect appears to be contraindicated, since the defect constitutes an escape valve without which the pulmonary arterial pressure would be still higher.

SUMMARY AND CONCLUSIONS

Defects of the cardiac septums appear clinically as a number of well-defined syndromes that can be identified on clinical grounds or with the aid of cardiac catheterization. They represent a wide spectrum of changes in the circulatory system, from a trivial shunt, not materially affecting the circulation, to a most serious and disabling cardiac lesion. Atrial septal defect affects the circulation primarily by a large left-to-right shunt leading to a striking increase of pulmonary blood flow, a dilatation of pulmonary blood vessels and hypertrophy and strain of the right heart. Pulmonary hypertension is found in some cases, but is considered a late complication rather than a direct effect of the defect. Occasionally the flow through the defect reverses the usual direction leading to anoxemia and chronic cyanosis.

Ventricular septal defects fall into two categories: small defects in which pressure differential between the two ventricles is maintained and larger ones in which the pressure in the two ventricles is identical. Smaller defects may have a clinically insignificant flow through them, in which case no important cardiac manifestations, other than the characteristic murmur, are present. In some cases, however, a large left-to-right shunt increases the pulmonary blood flow to such proportions that changes that are almost indistinguishable from atrial septal defect appear in the pulmonary circulation and the right side of the heart. The dynamic situation of a double-outlet left ventricle is present with the large ventricular septal defect, and severe pulmonary hypertension exists in the patient from the time of childhood, since the pulmonary arteriolar resistance is necessary for the maintenance of an adequate systemic blood flow. In such cases pulmonary hypertension dominates the clinical picture and its degree determines whether the flow is primarily from left to right or from right to left. In the case of a reversed flow, anoxemia and cyanosis appear, and such cases are in the category of the Eisenmenger complex. It is concluded that cases primarily suited to a surgical attempt to repair the septum are those in which a left-to-right shunt, large pulmonary flow, and little changes in intracardiac pressures are found.

Bence Jones Protein.—H. Bence Jones in 1847 presented a paper before the Royal Society in London which begins as follows: "On the first of November 1845 I received from Dr. Watson the following note, with a test tube containing a thick, yellow, semi-solid substance:—'The tube contains urine of very high specific gravity; when boiled it becomes highly opake; on the addition of nitric acid it effervesces, assumes a reddish hue, becomes quite clear, but, as it cools, assumes the consistence and appearance which you see: heat reliquefies it. What is it?' " . . . It is obvious, 100 years later, that Bence Jones never completely answered Watson's question. . . . The source of Bence Jones proteins has not been definitely established. Certainly the overwhelming chance is that a patient with Bence Jones proteinuria is a victim of multiple myeloma. For this reason many investigators have conjectured that the proteins are metabolites of the tumor cells. Other investigators have expressed the belief that the proteins result either from partial breakdown of a normal protein of higher molecular weight, or from some hindrance to the complete synthesis of such a protein. In the presence of Bence Jones proteinuria, similar proteins should be present in the serum, since in the absence of any indication of a renal origin, the proteins must be transported by the blood from the source of origin to the kidney. Ellinger was the first investigator to demonstrate qualitatively the presence of these proteins in the blood; he also detected them in ascitic fluid.—W. J. Martin, M.D., and D. R. Mathieson, M.D., Pyroglobulinemia (Heat-Coagulable Globulin in the Blood), *Proceedings of the Staff Meetings of the Mayo Clinic*, Oct. 7, 1953.

PATENT DUCTUS ARTERIOSUS AND VASCULAR RINGS

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A patent ductus arteriosus is a functioning vascular connection between the aorta and the pulmonary artery. Through this channel passes a volume of blood, its magnitude determined by the size of the ductus and the pressure differential between the two vessels. In uncomplicated cases the flow is from aorta to pulmonary artery and not vice versa; therefore, the patient is not cyanotic. It has been shown that as much as several liters of oxygenated blood per minute leak from the peripheral to the pulmonary circulation.[1] This implies that a volume of blood far larger than normal is flowing through the pulmonary arteries, pulmonary capillaries, and pulmonary veins and through the left auricle, the left ventricle, and the proximal portion of the aorta. The systemic flow may be reduced to below the normal level or may be maintained by a sufficient increase in the output of the left ventricle.

DISADVANTAGES OF PATENT DUCTUS

The occurrence of the patent ductus arteriosus and this aorta-pulmonary-artery shunt is associated with the following disadvantages. 1. There may be interference with growth, presumably because of reduction in systemic blood flow. This limitation of growth occurs in a significant number of children with patent ductus but not in all. Porter [2] studied a pair of identical twins, one of whom had patent ductus arteriosus. Before operation, the affected twin was shorter by 3.7 cm. In three years after operation, he more than made up the difference. 2. There may be infection of the abnormal vessel, subacute bacterial endarteritis. This was one of the chief causes of death in the preantibiotic era. It is still a significant hazard. 3. Congestive heart failure may occur, presumably related to the increase in the work of the left ventricle. Such failure is another major cause of disability and death. It occurs rarely in the young. It is progressively frequent with advancing age. 4. Pulmonary vascular disease may develop, with progressive increase in pulmonary artery and right ventricular pressures. Reversal of the pressure gradient may lead to forcible entry of pulmonary artery blood into the aorta. Changes in pulmonary function may take place, and eventually there may be failure of the right ventricle. 5. In rare instances, a greatly dilated pulmonary artery may rupture.

In spite of these disagreeable possibilities many children with obvious patent ductus arteriosus appear well and vigorous; they keep up with their contemporaries; and it is difficult to think of them as potential invalids. The disadvantages mentioned, nevertheless, are real, although their manifestations may be long postponed. In 1943 Shapiro and Keys [3] analyzed all cases of patent ductus arteriosus that were reported with postmortem confirmation. This classic article established a basis for thinking about the prognosis of patent ductus arteriosus. These authors stated that 80% of the patients eventually succumbed to the congenital lesion and that those alive at the age of 17 died at an average age of 35. This is a reduction in life expectancy of at least 25 years. Patent ductus arteriosus, then, is not to be described as a harmless or well-borne lesion. It is a time bomb with a long fuse, but still a bomb.

INDICATIONS FOR OPERATION

Since the epoch-making paper in 1939 by Gross and Hubbard,[4] patent ductus arteriosus, if uncomplicated and if found early in life, has been a curable lesion. The mechanical abnormality can be abolished by skillful surgery. As of April, 1952, Gross [5] had operated on 525 such patients; he had operated on 482 of these by the method of complete division. In this group of 482, the over-all mortality rate was 2%. In the large group without significant symptoms, the mortality was less than 0.5%. There were no recurrences. It is hardly appropriate for me, as a medical man, to judge the type of operative procedure, in this case a choice between division of the ductus and ligation. Abolition of the functioning connection is what is sought, with minimum risk and with minimum incidence of recurrence. Gross' results by the method of complete division have been mentioned. Scott [6] operated on 161 patients by a suture-ligation technique and reported only two deaths and no recurrences in this group.

The concern today is primarily with the indications for operation and the diagnostic selection of patients. The evidence now available indicates that (1) patent ductus arteriosus is a potentially disabling lesion and leads to premature death, (2) it is curable by operation, and (3) the mortality rate of the operation in good hands is low. In my opinion, therefore, the presence of uncomplicated patent ductus arteriosus in a young person is an indication for operation before the development of complications and even in the absence of symptoms and disability. One further proviso for the application of this rule is a surgeon with adequate training and experience with this type of vascular anomaly. The operation should be done at the time for maximum success and minimum

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risk, which for most patients means before puberty when the vessels are easier to handle and the ductus has not yet begun to grow shorter.

If these principles are accepted, the diagnosis is a vital matter. Curable disorders should not be underdiagnosed. The diagnosis will usually be made on the basis of the characteristic continuous murmur. This murmur is usually loud, exhibits a systolic accentuation, is loudest in the second or third left intercostal space, and is often widely transmitted. It is not a two phase, "to-and-fro" murmur but a one phase murmur that is going through the second sound but is not affected by it. As emphasized by Levine and Geremia[7] the systolic component is usually louder than the diastolic. Roentgenograms and electrocardiograms are useful chiefly in suggesting the possible presence of additional lesions. The systolic blood pressure is usually normal, but the diastolic is often somewhat lower than the usual range. About half of the patients exhibit a thrill. Intracardiac catheterization is not necessary for the diagnosis save in a few special situations.

A few patients with patent ductus arteriosus exhibit only a systolic murmur. Three such patients were carefully studied by Myers and his colleagues.[8] They found in each an elevated diastolic pressure in the pulmonary artery, approaching the systemic pressure. Such pressure would obviously minimize flow through the abnormal vessel during diastole and, therefore, influence the character of the murmur. Such patients exist, and the physician wishes to recognize them. Cardiac catheterization on these patients may produce diagnostic evidence and should be used on properly selected patients. This is not to say that a systolic murmur at the base, even a loud one, is in itself an indication for catheterization. The great majority of such murmurs are not associated with any form of heart disease. Only when such a murmur is observed in a child who is ill and who has, in addition to the murmur, more specific evidence of heart disease, such as enlargement, electrocardiogram abnormality, and congestion, is such a potentially traumatic procedure as catheterization to be considered as justified. It is an unnecessary reminder that, in the selection of patients with patent ductus arteriosus for operative treatment, care must be taken to eliminate those patients in whom the patent ductus is acting as a compensatory mechanism. Most such patients are cyanotic.

Pulmonic stenosis as the sole complication of patent ductus arteriosus is not a contraindication to closure or section of the ductus; an intraventricular or intra-atrial septal defect as the sole complication is not a contraindication; and the combination of pulmonic stenosis and a septal defect is usually a contraindication. It is precisely in this situation of a right-to-left shunt and a diminished pulmonary artery flow that a patent ductus arteriosus may be a useful compensatory mechanism.

The age of the patient is a factor in the choice of when to operate. Operations may be done on small babies if there are special reasons, but it is seldom necessary to hurry and (according to Gross[5]) the optimum age runs from 3 or 4 years up to 15 or 20, with the best chance for a smooth procedure between 6 and 12. Patients have been operated on with success even in the fifth or sixth decade, but here the vessels are more difficult to work with and the passage of years may have led to a shortening of the ductus. These facts influence the advice one gives to patients in the fourth or fifth decade who are found to have patent ductus arteriosus. Here general statements do not apply, and one must balance the considerable risks of operation against the need and the probability of improvement.

The results of surgery of the ductus in the young are good. Growth of the child proceeds at a normal rate; the liability to infection is greatly reduced; the cause of congestive heart failure is removed; and experience to date indicates that the tendency to develop pulmonary vascular disease is greatly diminished. Therefore, it is now generally agreed that uncomplicated patent ductus arteriosus in a young person is in itself an indication for operation.

VASCULAR RINGS

The situation is quite different in the case of vascular rings, by which is meant such abnormalities as double aortic arch, anomalous origin of the right subclavian artery, and right aortic arch. These exhibit an almost infinite variation. As emphasized by Schnitker[9] such anomalous structures often exist without producing disability. In this case they require no treatment. In other patients they do produce symptoms and disability, usually by compression of trachea, esophagus, or bronchus, and in these cases recognition and treatment may be vital. Attention is usually called to such lesions by symptoms deriving from trachea, bronchus, or esophagus. Dysphagia or malnourishment may occur in the patient with esophageal constriction. Abnormal breathing, chronic cough, or repeated attacks of respiratory infection may point to tracheal or bronchial compression. The possibility of such a lesion is suggested by these symptoms, and the diagnosis is made chiefly by x-ray examination, which, as Neuhauser[10] has pointed out, will be directed chiefly at visualizing the air and food passages and looking, from all directions, for evidence of their compression or distortion. It appears from the literature that x-ray examination of the trachea and esophagus is more informative than angiography (i. e., retrograde aortography). This is reasonable, since it is the effect on the trachea and esophagus and not the existence of a vascular abnormality that gives rise to disability.

These vascular abnormalities may also assume importance through wrong diagnosis. As pointed out by Roche, Steinberg, and Robb,[11] a right-sided aortic arch may be interpreted as tumor or aneurysm, ineffective or injurious treatment may be applied, and valuable time may be lost.

With regard to the treatment of patients with vascular rings, no such broad generalization can be made as was possible in the case of patent ductus arteriosus. Each case must be studied and treated in a highly individualized way. The important thing is that compression of trachea or esophagus by such vascular anomalies may sometimes be relieved by skillful surgery. The object of the operation is not a change in circulatory function but the release of trachea or esophagus from compression. The indications for operation are the symptoms and the identification of a vascular lesion such that the compression or deformity can be relieved without too great an impairment of the flow and distribution of blood.

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SUMMARY AND CONCLUSIONS

The advance of surgical and diagnostic techniques makes it possible definitely to help the patients with patent ductus arteriosus or vascular rings. In the case of patent ductus arteriosus, operation should be thought of as essentially curative and should be used widely to prevent the development of complications. In the case of vascular rings, operation should be reserved for those who have a remediable anomaly producing disabling or threatening symptoms.

25 Shattuck St.

PROCTOLOGIC HELP FOR THE GENERAL PRACTITIONER AND THE DIAGNOSTICIAN

CHAIRMAN'S ADDRESS

Louis E. Moon, M.D., Omaha

In this paper I am speaking not as a surgical specialist whose attention and interests are focused solely on the eradication of lesions at the outlet of the digestive tract but as a physician whose concern it is to see more sick persons restored to health. On the basis of my own experience, I believe that I can point out how the special knowledge and skills of the proctologist, or, if another name is preferred, the specialist in the diagnosis and treatment of anorectal and colon diseases, might be used to better advantage by internists, including gastroenterologists, cardiologists, and others, and by general practitioners, in promoting the common aim of all of us, that is, the improvement of medical care.

Those of us who practice a medical or surgical specialty may tend to exaggerate the importance of the lesions and conditions with which we constantly deal and to minimize the significance of those in other areas of the body. Nevertheless, as physicians we must remember that, whatever the region of our special interest, it constitutes only a part that is by no means a separate entity but is intimately united structurally and integrated functionally with every other part of the whole organism. Furthermore, we can never forget that the patients we treat are not merely bodies with disease but living human beings with individual and various emotional temperaments and minds and that they react to and are affected by pain and other symptoms in very different ways. If we deserve to be called physicians and not mere technicians, we will consider this interdependence of mind and body in interpreting the significance of any lesion anywhere in the body or the symptoms arising from it. Those of us whose special concern is disease of the digestive tract, whether we are gastroenterologists or proctologists, should not overlook the fact that all are dealing with the same alimentary canal. A good gastroenterologist must be able to recognize the presence of functional or structural abnormalities and of disease in the anus, rectum, and colon, and to recognize their relationship to disease or symptoms referable to the upper gastrointestinal tract. Likewise, the skilled proctologist must recognize and evaluate anorectal signs and symptoms related to disease from above.

AREAS OF COLLABORATION

In the past, talks by specialists in anorectal disease have often emphasized the importance of the proctoscopic examination in the diagnosis of lesions of the lower intestinal tract, and these exhortations apparently have been heeded. I am confident that the necessity for proctoscopic study in suspected cases of polyposis, carcinoma, and other diseases of the rectum, sigmoid, and colon is now generally recognized and accepted among internists, abdominal surgeons, and general practitioners. I wish here to emphasize a different role in which those of our specialty may be of help to other physicians and surgeons, that is, the contribution we might make in the interpretation of abnormalities of the lower intestine and anus in evaluating the significance of these findings in relation to remote symptoms in the gastrointestinal tract or elsewhere and in pointing out how these can best be treated. Often the proctologist is able to suggest corrective medical measures as ancillary treatment, and his function should not be limited to the performance of surgical procedures on the anus and rectum.

In thinking of my own experience in pursuance of this theme, so many examples came to mind that I realized it would be difficult to list and discuss them all. Among the conditions I might have mentioned, in which the collaboration of the internist and the anorectal specialist might be productive of better care for the patient, are melena or massive hemorrhage from the gastrointestinal tract; ulcerative colitis; regional ileitis; amebiasis; diverticulosis and diverticulitis, especially in the differentiation of the latter from carcinoma; and numerous other conditions. Instead of presenting a review of the many possibilities for collaboration between the internist and the proctologist and of enumerating all the situations in which proctologic help might be extremely valuable, I have

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chosen rather to confine my remarks to some of the factors concerned in partial obstruction of the anal outlet and to call attention to various ways in which this abnormality may influence the general clinical picture.

Before I do this, I want to relate a patient's experience while undergoing clinical investigation and treatment in a teaching hospital. The internist in charge of the medical service was the head of the department, and three of his four assistants who accompanied him on his rounds were exceedingly articulate and impressive, besides being tall and handsome. The fifth doctor, who always brought up the rear of the retinue, was of very small stature, with exceedingly myopic eyes requiring very thick lenses, and, furthermore, he could not speak without lisping. While the other assistants were competing to impress their chief with their clinical acumen by asking profound and searching questions and also were demonstrating their superior wit and humor in scintillating repartee, the little fellow never had a chance to open his mouth. Nevertheless, always, just as they were going out the door and the others were already conducting a learned symposium about the patient in the next room, he would turn around and ask plaintively, "Did your bowelth move?" A question, by the way, the others never thought to ask. This patient says that this happened every single day, without fail, and her most vivid and durable memory of her two-month sojourn in the hospital is that little doctor, with his last and only word, "Did your bowelth move?"

I am sure that some of our medical colleagues in other specialties would accuse those of us interested in anorectal disease of being of like single-track mind, since we so consistently and persistently ask the same question about any patients they may discuss with us or refer to us. If they are sometimes amused or annoyed (depending on the circumstances) by our habitual use of this prosaic, but very pertinent question, there are occasions, also, when we might have similar reactions to their answer to it. I recall, for example, that several years ago a certain neurologist called me in regard to a patient under his care. I asked the usual question, of course, "Does she have any difficulty with elimination?" His answer was: "No, she doesn't have any trouble. She takes two compound cathartic pills each night and an ounce of mineral oil four times a day and an enema, if necessary, so she doesn't have any difficulty with her bowels." I could cite comparable statements that have been made to me by general practitioners and internists, too.

There are numerous causes for poor elimination of fecal material from the intestinal tract. Some of the causes have to do with nutrition, general metabolic disturbances, and lesions of the upper portion of the digestive tube. In the present discussion, I am not concerned with these, for I do not wish to talk about constipation, but rather about the symptoms, both local and remote, that may result from the partial obstruction caused by an inadequate anal outlet. And what I want to emphasize particularly is that collaboration between and among the various medical specialists would be helpful in rendering relief to many patients with anal contracture in whom the presence of this abnormality is ignored or its significance improperly interpreted.

IMPORTANCE OF SYMPTOMS

It appears that, generally speaking, the internist and general practitioner do not attach sufficient significance to anorectal disease, more particularly, to partially obstructing lesions. In many instances, an anal lesion goes unrecognized, because the symptoms have been attributed to other causes and the anal outlet was not examined. In others, though the presence of an anal or anorectal lesion is noted, it may appear so trivial that it is not suspected of producing a train of severe symptoms for which other cause is being sought. Any diagnostician or medical practitioner should be able to ascertain whether there is anal disease, provided he takes the trouble to look in the right place. When such a lesion is recognized, then its significance must be evaluated, and it is here that the proctologist can be of service in relating the importance of the anal difficulty to the general clinical situation.

The anal lesions most frequently observed are anal fissure with muscle spasm; pectenosis, which is an inflammatory condition in the anal canal, producing anal contracture; postoperative scar tissue; congenitally small anal canals; internal hemorrhoids obstructing the anal opening; cryptitis; and papillitis. The most frequent complaint of patients with these anal lesions is the inability to empty the bowel. The typical story is that there is a desire to go to stool, but, in the attempt to pass it, the stool apparently comes to a certain point within the rectum and then cannot be expelled. The patient often says that he has a stricture there. Another typical and frequent complaint is that a small amount of stool is expelled, but the bowel does not empty completely, and that an enema often or usually is necessary to produce complete evacuation. When a formed stool is passed, there is usually pain described as a tearing or splitting, accompanied by bleeding and followed by an aching or severe burning or throbbing that may last from one or two hours or up to the time of passage of the next stool. These patients often complain also of the sensation of sitting on a hard lump or ball, which will not pass through the anal outlet. They probably are sitting on a lump, because an anal contracture is the most frequent cause of fecal impactions.

The textbooks have taught that pencil-like stools are an indication of constriction of the anal outlet; this is true, but this type of constriction usually is due to muscle spasm without anal disease. Anal contractures and stenoses that are caused by inflammatory disease or scarring usually give rise to liquid or watery stools, often with incontinence, since formed stools will not pass. The presence of frequent liquid stools usually implies that the bowel is not emptying properly or that some irritative substance is present and should be removed. In such instances, the intestinal tract should be cleansed thoroughly by some method that will not increase the irritation, preferably by irrigation with a isotonic sodium chloride solution enema. Too often, however, in applying symptomatic treatment, the physician prescribes bismuth and paregoric mixtures or other astringents, which only serve to intensify the difficulty. Another mistake that is made much too frequently in these cases of contracture of the anal orifice is to give barium by mouth or as an enema for roentgenographic examinations, without having made a digital examination of the anus and rectum. This often makes a bad situation worse, and the patient is placed in serious difficulty in attempting to eliminate the barium. Impactions are frequent in such instances, and complete obstruction may occur if there is a constrictive lesion higher in the intestines. Too often, on hearing complaints about difficulty with elimination, the physician thinks it is just another case of constipation and prescribes a change in diet, artificial bulk, mineral oil, cathartics, or enemas, without examining the anal canal. These measures may help the patient with a partial obstruction in forcing some stool through the pencil-like opening, but the evacuation will not be complete. The use of artificial bulk in these cases is definitely contraindicated.

When an anal contracture is neglected, either because the patient does not seek medical attention or because his physician fails to recognize its presence or significance, the local stenosis becomes tighter and numerous remote symptoms supervene. The situation becomes critical when the impaction produces a complete intestinal obstruction. When this occurs, the proctologist frequently is called in to make a proctoscopic examination, which is impossible because the bowel is not empty. The history and a digital examination will tell the entire story. In most instances, the patient would have been saved much suffering if proctologic help had been sought earlier. If the mechanical cause were recognized in many of these cases of so-called constipation, many fissures, chronic ulcers, abscesses, and fistulas could be prevented, as well as the aggravation or production of serious remote symptoms.

RELATED SYMPTOMS

The remote symptoms caused or aggravated by a constricting lesion of the anal orifice that results in partial obstruction are numerous. Those that I see oftenest are conditions that simulate appendicitis, although the appendix may have been removed, and cholecystitis, although the gallbladder may have been removed, and those that simulate anginal pain. I believe firmly that an anal contracture that prevents the expulsion of gas is a very definite factor in producing pain in the upper and lower right quadrants and in the upper and lower left quadrants of the abdomen. The presence of this pain often leads to abdominal operation that could have been avoided if an anorectal examination had been made and the findings properly evaluated. Furthermore, the presence of an obstructive lesion at the anus intensifies the symptoms and increases the hazards in patients with true appendicitis and cholecystitis and should definitely be dealt with as an integral part of the therapeutic management in such cases. Many of these patients are also obese, and I believe that the poor elimination and this difficulty in emptying the bowel properly are factors in their inability to control their weight.

This is not the time nor the place to introduce a discussion of the physiologic factors, but it might be recalled that the work of Alvarez and of Case has shown the effect of obstruction in disrupting the normal gradients of intestinal motility. Their findings make it justifiable to assume that, in the case of distal obstructive lesions, the exaggeration of the antiperistaltic movements in the colon leads to an enlargement of the right portion of the colon and that the retention of food residue will be prolonged in proportion to the degree of obstruction in the distal segment of the colon. This might well account for the gas pains and distention seen in connection with anal contracture.

I am constantly impressed by the number of patients being treated for cardiac disease who have anal abnormalities or disease that prevents proper elimination. Their physicians have told them that the heart condition would not permit them to have corrective surgery. Nevertheless, it seems evident that the poor elimination owing to a partial obstruction, with the distention and epigastric pressure thus caused, presents a far greater hazard, as far as the cardiac condition is concerned, at least in numerous instances, than an anorectal operation would. Anal contracture always implies straining at stool, and this creates intrathoracic pressure that puts a severe strain on a crippled heart. If it were possible to collect statistics on this, I believe it would be found that a relatively high proportion of severe and also fatal coronary attacks have occurred when the patients were at stool. It has also been found experimentally that packing of the rectum with absorbent cotton will elevate the blood pressure approximately 10 mm. Hg in the dog. The pressure is maintained until the material filling the rectum is removed. This finding suggests that distention of the colon may be a factor of serious import in a patient with cardiovascular disease. Yet, during the past few weeks, I have been called to see two different patients hospitalized because of acute coronary thrombosis. Both patients had been complaining of great pain at stool over a long period of time, and, in both instances, my examination revealed an anal opening that would not admit the little finger and an enormously distended abdomen. In these cases, the bowels had probably not emptied satisfactorily for weeks, and yet nothing had been done about it until the heart condition had reached a critical stage. At the time I saw these patients, the situation was too precarious to permit surgery. Besides the patients with true coronary disease who have anorectal difficulties, there is a large group of patients in whom the precordial and upper left quadrant distress is due to reflex pressure caused by a distended colon. I am quite sure of this, for I have seen a great many instances in which pseudoanginal symptoms cleared completely after the correction of an anal contracture.

Besides the symptoms referable to the upper gastrointestinal tract or cardiovascular system, there are many other remote sequelae of the partial obstruction caused by anorectal contracture. The headache, furred tongue, foul breath and malaise, often mentioned in the textbooks as accompaniments of obstipation, frequently clear completely when the difficulty is relieved, and I have seen instances of toxic optic neuritis, toxic labyrinthitis, paroxysmal tachycardia, and asthma completely relieved after the correction of an anal obstruction. I have also been called in consultation to see elderly patients in psychopathic wards who had anal contractures with impactions that obviously had been present for weeks. These patients cleared mentally after the impaction was removed and the obstruction corrected and remained well, with no further evidence of a psychosis.

INDICATIONS FOR SURGERY

To the consultant who sees patients who have been neglected until serious obstruction has developed, such a situation always seems deplorable and sometimes also inexcusable. Although in some instances the physician has been at fault in not recognizing the presence of anal disease or in not properly evaluating its seriousness, his failure often is an honest one, in that he is trying to protect his patient from needless surgery and he is not aware that the anal lesion may be intensifying the symptoms for which he is treating the patient or that it may even be causing them in some cases. From the proctologic standpoint, though, it is often true that, by the time the patient's physician recognizes that an anorectal operation should be performed, the constricting anal lesion may have masked the symptoms of a rectal carcinoma and it may be too late for corrective surgery to be successful.

Not all the delay that is characteristic of so many of these cases, however, can be blamed on the physicians who treat these patients, for the patients themselves display a great reluctance to submit to anorectal examinations, because of the fear of being hurt. In the management of many who have painful lesions, anesthesia has to be administered in order to carry out the proper examinations. It is my practice to anesthetize and examine the patient and then to perform the necessary surgery for the relief of the obstructing anal lesion, provided the examination does not show a lesion or tumor at the rectosigmoid or in the rectum. After such a procedure, a barium study of the colon should be made.

If the proctologist can be of assistance in evaluating the seriousness of anorectal lesions that should be eradicated, he can also be equally helpful in advising against operation when the nature of the lesion is such that surgical treatment is contraindicated. For example, no anorectal operation will cure either diarrhea or constipation that is being caused by dietary or metabolic disturbances or by lesions or functional abnormalities in the upper digestive tract. Another example is that of the elderly man who has prolapsing hemorrhoids and difficulty in voiding. The patient may think and even his doctor may think that the hemorrhoids should be removed, but the proctologic consultant knows that the prostatic obstruction and straining in voiding may be the cause of the hemorrhoidal prolapse. In cases of ulcerative colitis, the proctologist also often has to point out that an operation for fistula and hemorrhoids is contraindicated because of their tendency to recur. The refusal to perform operation in cases of this type, and suggestions as to effective medical measures rather than surgical treatment are useful functions that the specialist in the treatment of anorectal disease can perform in his collaboration with other medical practitioners. Advice of this type, in its proper place, is just as important as the recommendation and performance of surgical procedures in their place.

The discussion of the various types of surgical procedures has no point here, but I do want to mention that the purpose of all treatment is the restoration of function as well as eradication of the lesion that is causing constriction or obstruction. In any operation performed on the anus and rectum, the function of the anal outlet must be restored, and, to allow proper elimination, it must remain of adequate size. I say this because many of the anal contractures that I see have developed as the result of anorectal surgery. Every day I see patients who tell me that they had an operation and that they have no hemorrhoids but that they have had difficulty in emptying their bowels ever since. It is not good surgical practice to remove hemorrhoids or any other lesion and to leave the patient with a scarred anus that creates as much difficulty as the original trouble, and sometimes more.

NEED FOR INCREASED CONSULTATION

I hope that the foregoing somewhat random observations from my own experience have served to point up the fact that proctologic consultation might be useful and helpful to the internist and the general practitioner in the management of a large group of patients who are not now getting the best care that they might receive if closer collaboration were the rule rather than the exception. I have managed to convince a few internists that a constricted anus is a matter for thorough investigation by a proctologist, and I believe that numerous patients have been benefited and have avoided much suffering as the result of such cooperation.

I wish that as a result of my remarks here all of you who are treating patients who have the remote symptoms that have been described would make a systematic survey to see how many of them have difficulties of elimination that are due to mechanical obstruction at the anus. If my remarks could stimulate some investigation along this line, I am sure that the results for many of your patients and your own satisfaction in helping them would make such a study worth your while.

There are many difficulties, I know, in the way of routine referral of patients for special examinations of this type, but I believe it behooves us to devise some more effective facilities for such teamwork. Perhaps this could be done in our hospitals by establishing some sort of interconsulting service that would be available to patients without exorbitant expense. There should be some way in which gastroenterologists, proctologists, roentgenologists, and others could establish a consulting service for general practitioners in the management of patients with diseases of the digestive tract. If such consultation and facilities were available, then barium enemas would not be administered before at least a digital anorectal examination were made, just to cite one example of the type of service that might be rendered. If proctologic consultation were more readily available through some collaborative organization of this type, then perhaps anorectal and proctoscopic examinations by a proctologist might be recommended as a part of the annual physical examination. There seems no doubt that, if such routine examinations were to be carried out, many cases of malignant disease of the colon and rectum would be discovered earlier and could be successfully treated.

Whatever mechanism or organization can best implement closer collaboration between and among medical and surgical specialists is the one that should be established in each community. As physicians interested in advancing the care of the sick, we must recognize that the next stage in the improvement of medical care demands the cooperation of specialists and the coordination of facilities. Even without any new drugs or better methods than we now have, the practical care of patients could be much improved if our combined knowledge were made more generally available.

CONCLUSIONS

Many of us who have been in practice a good many years are realizing that, wonderful as it is and however much it has accomplished, the science of medicine, by itself, is not enough. We must practice the art of medicine, too, the art that takes into account and gives attention to the personal and emotional needs of the patient. All of us can recall old doctors we knew in our youth who were masters in the art of medicine and who performed miracles of diagnosis and healing without the scientific facilities we have today. We live in a different age, and we cannot and would not go back to the horse-and-buggy doctor any more than we would go back to the horse and buggy itself. Nevertheless, it is high time that we inculcate some of the spirit of the old family physician into our practice of medicine in this latter half of the 20th century. The epitome of that spirit, it seems to me, is to give our patients the very best that we possibly can. The methods of our time and the enormous volume of knowledge do not permit this to be done on any effective scale by each man working alone. But with the unselfish altruism and the love of humanity that have always characterized the practitioners of medicine in every era of the past, we can and will find the ways to express this spirit most effectively through collaborative efforts aimed at relieving the suffering of the individual human beings who are putting their trust in us to heal them and restore them to more abundant lives.

107 S. 17th St. (2).

CLINICAL NOTES

TREATMENT OF BELL'S PALSY WITH CORTISONE

W. P. Robison, M.D.
and
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Though Bell's palsy is a common disorder that may occur in persons of any age from infancy to old age, little or no progress was reported in its treatment until recently. This familiar seventh nerve paralysis is usually of acute onset. The lesion has been described as inflammation of the nerve or of its sheath within the facial canal or elsewhere. Edema of the seventh nerve, of its sheath, or of the periosteal tissues of the surrounding facial canal, from noninflammatory changes, has also been thought capable of producing sufficient compression to disrupt function.

There is much controversy over the etiology of Bell's palsy, though several plausible theories have been advanced. Park and Watkins [1] have listed several of the causes that have been suggested as follows: (1) specific infectious neuritis, (2) vascular dysfunction with secondary ischemia of the facial nerve, (3) refrigeration, (4) subclinical mastoid infection involving the region of the fallopian canal, and (5) congenital stenosis of the fallopian canal associated with some precipitating factor. The majority of patients with this disorder are considered to be of the "idiopathic" type. In many cases no predisposing cause is evident. It is not uncommon, however, to receive a history of exposure to cold or drafts. In other instances we find the paralysis following an acute infection of the nasopharynx.

Though Alpers [2] says that some patients who have Bell's palsy may recover within a few weeks, he notes that severer involvements persist much longer and that the patient may recover only in the course of two to three months, or longer. Walshe [3] states, "Most cases begin to show voluntary movement within three to four weeks and then proceed to complete recovery within about three months." Wechsler [4] has noted the following concerning the course of Bell's palsy: "Mild facial paralysis, generally with minimal or no electrical changes, lasts two to four weeks. . . . Commonly, recovery takes place in a few months, up to six, and in very stubborn cases in a year or two." Brain [5] has found that most patients suffering from Bell's palsy will recover completely, though the course of the disorder is likely to extend over several months. Bing [6] seems to feel that this type of facial paralysis usually lasts several months. Apparently most authorities feel that in patients suffering from severe Bell's palsy recovery is not likely to occur in less than months.

Various methods of treatment are being used in attempt to cure Bell's palsy. Lathrop [7] has noted, "At the present time, the treatment appears to vary between doing nothing at all to surgical intervention in every case exhibiting a negative faradic test." Our use of cortisone in the treatment of two patients who were suffering from the early stage of Bell's palsy was prompted by a report of one such patient by Rothendler [8] in 1951.

REPORT OF CASES

CASE 1.—A 13-year-old girl was first seen on Feb. 15, 1952, with paralysis of the right side of the face that had persisted since the evening of Feb. 12. The facial weakness had gradually grown worse after a rather sudden onset. The patient related that she had washed her hair on Feb. 9 and had dried it with a mechanical blower. Some tenderness and moderate discomfort of the right side of the face was noticed on Feb. 10 and 11. There was no pain present at the time of her first visit. Physical examination revealed a complete paralysis of all the muscles on the right side of the face. There was drooping of the corner of the mouth and flattening of the nasolabial fold. The palpebral fissure was widened on the right. The patient could not close her right eye or wrinkle her forehead on the involved side. Attempts to close her eye caused an upward and lateral deviation of the eyeball. There was tearing in the right eye, with some evidence of conjunctival inflammation. The patient could not whistle or blow out her cheek. Hearing and taste were not tested. There was no sensory loss on the involved side. The patient did not

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Dr. Philip A. Mulherin assisted in this study.

[1] Park, H. W., and Watkins, A. L.: Facial Paralysis: Analysis of 500 Cases, Arch. Phys. Med. **30**: 749-762 (Dec.) 1949.

[2] Alpers, B. J.: Clinical Neurology, ed. 2, Philadelphia, F. A. Davis Company, 1949, pp. 211-212.

[3] Walshe, F. M. R.: Diseases of the Nervous System Described for Practitioners and Students, Baltimore, Williams and Wilkins Company, 1949, p. 271.

[4] Wechsler, I. S.: Textbook of Clinical Neurology with an Introduction to the History of Neurology, ed. 7, Philadelphia, W. B. Saunders Company, 1952, pp. 267-268.

[5] Brain, W. R.: Diseases of the Nervous System, ed. 3, London, Oxford University Press, 1947, p. 178.

complain of hyperacusis. The remainder of the examination was not remarkable. Cortisone therapy was begun immediately as follows: two 25 mg. tablets three times a day for 48 hours, then two 25 mg. tablets two times a day for the next 24 hours. Three days after the cortisone therapy was begun the patient showed improvement that was obvious and gratifying. She was able to close her right eye without difficulty, and all the formerly paralyzed muscles of the face had regained considerable strength. After the third day the cortisone was given as follows: one 25 mg. tablet three times a day for the next 10 days. On the seventh day of this treatment, there was only 10 to 15% of the original weakness remaining. At this time the patient was able to whistle, to close her right eye, and to wrinkle her forehead. There was virtually no asymmetry of the face, and the usual facial movements were done without difficulty. Six days later the patient was seen again, and recovery was complete.

Case 2.—A 5-year-old boy was seen on Nov. 22, 1952, with a paralysis of the left side of the face, which had been present for one week. During this period no improvement had occurred. It was learned that the child had had an infection of his tonsils for the two weeks preceding his first visit. At this time he complained of pain inside the left ear. Neurological examination revealed a smoothing out of the nasolabial fold and a drawing of the mouth toward the right side. Frowning and raising of the eyebrow on the left side were impossible. The patient could not close his left eye, and the flow of tears was pronounced. The left cheek was noticed to puff out during respiration. There was no sensory loss present. Hyperacusis was not complained of. The taste was not tested. Special auditory tests were not made, but there appeared to be a minimal impairment of hearing on the left. The remainder of the neurological examination was normal. Further physical examination revealed an acutely inflamed left ear drum with evidence of otitis media. Only mild inflammation of the right ear drum was found. There was enlargement of both tonsils with accompanying inflammation. The nasopharynx showed signs of moderate infection. The remainder of the examination was not remarkable. Cortisone therapy for the facial paralysis was begun with 25 mg. initially by mouth followed by 12.5 mg. orally every six hours for the first day. For the next four days 12.5 mg. was given orally every six hours. Treatment of the left ear, the tonsils, and the nasopharynx was carried out separately by an ear, eye, nose, and throat specialist. On the fifth day, the child was seen and only about 10% of the original weakness of the left side of the face remained. The child was able to close his left eye, to whistle, and to wrinkle his forehead. Only minimal asymmetry was present, and there was no evidence of tearing. Marked improvement of the left ear, tonsils, and the nasopharynx was noted at this time. For the next five days the child was given 12.5 mg. of cortisone orally three times a day. By the 10th day virtually no evidence of Bell's palsy remained and the general physical condition of the child was good. For the next seven days the therapy was as follows: 12.5 mg. of cortisone orally three times a day for four days, then 12.5 mg. orally daily for the next three days. The child was seen again on the 17th day, and recovery was complete.

The use of cortisone therapy in these two patients was followed by prompt recovery. No patient suffering from Bell's palsy seen previously in our department over the last 15 years has recovered in less than several months. Since our observation of these two patients, whom we treated with cortisone on the basis of Rothendler's original report, he has published a study of seven other patients who were similarly treated.[9] One of his patients had shown paralysis for 10 days prior to cortisone administration. During this period faradic tests had shown indications of nerve atrophy. This patient showed no response to cortisone. The other six patients, with no evidence of nerve atrophy, responded promptly to cortisone therapy. Rothendler states: "The beneficial action of cortisone in these patients can be assumed to be due to a reduction of congestion and related ischemia of the nerve and its sheath in the bony canal." To our knowledge the only other patients reported to have recovered from Bell's palsy so promptly were those who had stellate blocks by Swan.[10]

CONCLUSION

We are encouraged by the results of cortisone therapy in these two patients suffering from the early stages of Bell's palsy. Obviously we cannot draw sweeping conclusions from observations so limited. We feel justified in the hope that others will test the use of cortisone in this disorder.

University Hospital (Dr. Robison).

6. Bing, R.: Textbook of Nervous Diseases, translated by W. Haymaker, St. Louis, C. V. Mosby Company, 1939, p. 82.

7. Lathrop, F. D.: Affections of Facial Nerve, J. A. M. A. **152**: 19-25 (May 2) 1953.

8. Rothendler, H. H.: Bell's Palsy Treated with Cortisone, J. Nerv. & Ment. Dis. **114**: 346-347 (Oct.) 1951.

9. Rothendler, H. H.: Bell's Palsy Treated with Cortisone, Am. J. M. Sc. **225**: 358-361 (April) 1953.

10. Swan, D. M.: Stellate Block in Bell's Palsy, J. A. M. A. **150**: 32-33 (Sept. 6) 1952.

TRIAD OF PNEUMONIA, PNEUMATOCELE, AND SPONTANEOUS PNEUMOTHORAX IN INFANTS

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and
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Intrathoracic collections of air have been of particular interest to the pediatrician because of the serious clinical picture often presented by infants and children with this condition. The dyspnea, cyanosis, and frequently critical state of these patients has led to a voluminous literature describing such cases. The purpose of this paper is to describe the concurrent association of pneumonia, pneumatocele, and spontaneous pneumothorax in three infants. This triad was first described in 1947 in the British literature.[1] This is the second report of this condition.

REPORT OF CASES

Case 1.—A 6-week-old white girl was admitted to the Jewish Memorial Hospital on Feb. 24, 1952. She had been in good health and was gaining weight. Two days before admission, loss of appetite was noted and respiratory distress began. On admission, she was found to have a right pneumothorax, with 40% collapse and displacement of the heart to the left side. Inflammatory changes were noted in the right lung involving the right, middle, and lower lobes. Thoracentesis was done. Air and 2 cc. of purulent material were aspirated from the right side of the chest. On admission, the blood cell count showed 11 gm. per 100 cc. (69%) of hemoglobin (photoelectric [Lumitron] method); 3,040,000 red blood cells; 34,000 white blood cells; 49% polymorphonuclears; 7% band cells; 39% lymphocytes; and 8% monocytes. Penicillin therapy was begun. Repeat chest roentgenograms showed resolution of the pneumonia and reexpansion of the right lung. Chest roentgenograms on Feb. 28 and March 1 showed multiple pneumatoceles in the right lung, which disappeared before discharge. A follow-

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[1] Heber, J.: Pneumatocele Occurring During Pneumonia and Rupturing to Form Pneumothorax, Proc. Roy. Soc. Med. **40**: 534 (July) 1947;

up film, taken 12 days after discharge, showed only flattening of the right leaf of the diaphragm as residual of the entire process.

Comment.—On admission, this child already had a pneumothorax that undoubtedly had been preceded by a pneumonic process. Air-containing shadows or pneumatoceles were seen as the collapsed lung reexpanded. The purulent material from the right side of the chest was contaminated so that the responsible organisms could not be identified.

Case 2.—A 5-month-old white boy was admitted to the hospital on June 13, 1951, with physical signs of pneumonia of the upper lobe of the right lung and atelectasis. These findings were confirmed by chest roentgenograms. Five days later roentgenograms showed resolution following chloramphenicol therapy. The child had a temperature of 101.8 F on admission, which dropped to normal on the sixth hospital day. Laboratory examination on admission showed 8.8 gm. per 100 cc. (55%) of hemoglobin; 3,750,000 red blood cells; 18,600 white blood cells; segmented neutrophils, 54%; band cells, 8%; eosinophils, 1%; lymphocytes, 35%; and metamyelocytes, 2%. The child was discharged on June 20, 1951.

The patient was readmitted on June 21 because of acute respiratory distress. Roentgenograms showed multiple pneumatoceles with fluid levels in the right lung field. A hydropneumothorax was also present. A blood cell count on June 22 showed hemoglobin 8.8 gm. per 100 cc. or 55%; 3,640,000 red blood cells; 38,400 white blood cells; segmented neutrophils, 75%; band cells, 7%; lymphocytes, 15%; monocytes, 2%; and myelocytes, 1%. The temperature was 103 F. After therapy with penicillin and chloramphenicol (Chloromycetin), the temperature returned to normal on the fourth day. Two days later, the lung reexpanded almost entirely, with considerable decrease in the infiltration. On July 3 the lung fields were entirely clear. The child was discharged on July 6, 1951.

Comment.—The sequence of events in this case could be followed from onset to termination. The pneumonia that initiated the illness apparently subsided. However, this was followed by a spontaneous pneumothorax and the appearance in the reexpanding lung of air cysts with fluid levels. Rapid disappearance of these shadows occurred as the lung completely reexpanded.

Case 3.—A 7-week-old Negro boy was admitted with a history of coughing for six days, vomiting, and fever. Six days prior to admission, the child had been seen in the pediatric clinic, the mother complaining that he had a "cold." The temperature rose, and the patient became dyspneic and began to vomit. On admission, the child had a temperature of 102 F. Hemoglobin was 8.6 gm. per 100 cc. (54%); 14,000 white blood cells; and the blood culture was normal. There was a mild injection of the pharynx. A chest roentgenogram showed pneumonia in the right lower lung field, extending outward from the right hilum. This was followed by a 30% pneumothorax of the right side, with cystic areas visualized in the right lower lung field. The right lung reexpanded after several days. A cystic area at the right base became progressively larger, giving the appearance of a large pulmonary cyst. This persisted even after the patient had become completely asymptomatic and had left the hospital.

Comment.—The illness in this child began with a pneumonia that was complicated by a spontaneous pneumothorax. A large pulmonary air cyst developed at the base of the expanding lung and persisted until discharge from the hospital.

COMMENT

The triad of pneumonia, pneumatocele, and spontaneous pneumothorax was seen in each of the three cases presented, and in the same order of occurrence; that is to say, the sequence of events was the same in all three cases. Each infant showed a moderately severe pneumonia that was soon followed by a spontaneous pneumothorax of the affected lung. Although all of these infants were alarmingly ill at the onset because of cyanosis and dyspnea, rapid improvement occurred with the reexpansion of the collapsed lung. As the collapsed lung began to expand, air-containing shadows or cysts were seen in all three cases, suggesting that small foci of necrotizing pneumonitis may have resulted in disruption of lung parenchyma. The entire process was a benign one, although, in case 3, the air cyst in the right lung of the patient still persisted at the time of his discharge. The organisms responsible for the original pneumonia in our cases were not isolated. The appearance of air cysts in the course of a necrotizing pneumonia suggests infection by a mixture of organisms.[2] Caffey [3] has pointed out the generally benign behavior of these pulmonary cysts and that spontaneous regression without surgical removal is the rule even when they are demonstrated during the first weeks or months of life. A careful study of our cases suggests that these air cysts are acquired, are preceded by an episode of pneumonia, and may be associated with pneumothorax or pyopneumothorax. The pneumothorax may be so transient that unless roentgenograms are taken at sufficiently short intervals, this complication may be easily missed.

SUMMARY

Three concurrent cases of pneumonia, pneumatocele, and spontaneous pneumothorax are described. The importance of this triad occurring in infants is emphasized.

12 E. 76 St. (21) (Dr. Bass).

2. Rabin, C. B.: X-Ray Diagnosis of Chest Diseases, Baltimore, Williams & Wilkins Company, 1952.

3. Caffey, J.: On the Natural Regression of Pulmonary Cysts During Early Infancy, Pediatrics 2: 48 (Jan.) 1953.

COUNCIL ON PHARMACY AND CHEMISTRY

REPORT OF THE COUNCIL

Inasmuch as there have been many inquiries concerning the possible harmful effects of chloramphenicol, the Council has reviewed the status of this drug and adopted the following statement, which appears in the 1953 edition of New and Nonofficial Remedies, for publication in The Journal.

R. T. Stormont, M.D., *Secretary.*

CHLORAMPHENICOL

Because of the occurrence of serious and fatal blood dyscrasias, it is advisable to restrict the use of chloramphenicol to the treatment of typhoid fever and other serious infectious diseases caused by organisms controlled by chloramphenicol but resistant to other antibiotics or other forms of treatment.

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. Stormont, M.D., *Secretary.*

Hydrocortisone Acetate (See New and Nonofficial Remedies *1953, p. 351).*

The Upjohn Company, Kalamazoo, Mich.

Ointment Cortef Acetate: 5 gm. tubes. An ointment containing 10 or 25 mg. of hydrocortisone acetate in each gram. U. S. trademark 583,191.

Mephenesin (See New and Nonofficial Remedies 1953, p. 466).

Physicians' Drug & Supply Company, Philadelphia.

Tablets Tolansin: 0.25 and 0.5 gm.

Oxytetracycline (See New and Nonofficial Remedies 1953, p. 124).

Pfizer Laboratories, Division of Chas. Pfizer & Co., Inc., Brooklyn.

Pediatric Drops Terramycin: 1 gm. vials. A powder with added flavoring for suspension in water to give a solution containing 100 mg. of oxytetracycline in each cubic centimeter.

Penicillin for Inhalation (See New and Nonofficial Remedies 1953, p. 132).

The Evron Company, Inc., Chicago.

Soluble Tablets Potassium Penicillin G: 50,000, 100,000, 200,000, and 250,000 units.

Penicillin for Oral or Sublingual Administration (See New and Nonofficial Remedies 1953, p. 133).

The Evron Company, Inc., Chicago.

Tablets Potassium Penicillin G (Buffered): 50,000, 100,000, 200,000, and 250,000 units. Buffered with calcium carbonate.

Phenylephrine Hydrochloride-U.S.P. (See New and Nonofficial Remedies 1953, p. 201).

Winthrop-Stearns, Inc., New York.

Solution Neo-Synephrine Hydrochloride 0.25%: 15 cc. plastic spray bottles. A solution containing 2.5 mg. of phenylephrine hydrochloride in each cubic centimeter. Preserved with phenylmercuric acetate 1:50,000.

Testosterone Propionate-U.S.P. (See New and Nonofficial Remedies 1953, p. 398).

S. J. Tutag & Company, Detroit.

Solution Testosterone Propionate in Oil with Benzyl Alcohol 3%: 10 cc. vials. A solution in sesame oil containing 25 or 50 mg. of testosterone propionate in each cubic centimeter.

COUNCIL ON FOODS AND NUTRITION

The Council has authorized publication of the following statement, which was prepared jointly by the Food and Nutrition Board, National Research Council, and Council on Foods and Nutrition of the American Medical Association.

JAMES R. WILSON, M.D., *Secretary.*

A STATEMENT OF GENERAL POLICY CONCERNING THE ADDITION OF SPECIFIC NUTRIENTS TO FOODS

During the 1930's certain nutritional deficiencies were prevalent in the population of the United States, and newly developed synthetic vitamins were being used in foods with little or no scientific guidance. In 1939 and again in 1945, the Council on Foods and Nutrition of the American Medical Association adopted its policies on the proper additions of vitamins and minerals to foods.[1] In 1941 the Food and Nutrition Board (originally the Committee on Foods and Nutrition) of the National Research Council likewise adopted a policy on the addition of specific nutrients to foods. These statements of policy have now been reconsidered jointly by the Food and Nutrition Board and the Council on Foods and Nutrition in the light of experience and of new developments. There is good evidence to indicate that the policies have been beneficial to the public and have encouraged sound nutritional practices. The policies are therefore reaffirmed in principle and, with revision of wording, are embodied in the following statements:

1. With carefully defined limitations, the principle of the addition of specific nutrients to certain staple foods is endorsed for the purpose of maintaining good nutrition as well as for correcting deficiencies in the diets of the general population or of significant segments of the population. The requirements for endorsement of the addition of a particular nutrient to a particular food include (*a*) clear indications of probable advantage from increased intake of the nutrient, (*b*) assurance that the food item concerned would be an effective vehicle of distribution for the nutrient to be added, and (*c*) evidence that such addition would not be prejudicial to the achievement of a diet good in other respects. These requirements have been met in the specific cases indicated in paragraph 6 below.

2. The desirability of meeting the nutritional needs of the people by the use of natural foods as far as practicable is emphasized, and to that end education in the proper choice and preparation of foods and the betterment of food production, processing, storage, and distribution so as to provide more fully the essential nutrients native thereto are to be encouraged.

3. In order to avoid undue artificiality of food supply, foods chosen as vehicles for the distribution of additional nutrients should be, whenever practicable, those foods which have suffered loss in refining or other processing, and the nutrients added to such foods should preferably be the kinds and quantities native to the class of foods involved.

4. The addition of other than natural levels of nutrients to foods which are suitable vehicles of distribution may be favored when properly qualified judgment indicates that the addition will be advantageous to the public health and when other methods for effecting the desired purpose appear to be less feasible.

5. Whenever technological and economic developments lead to extensive reduction in the consumption of a staple food, with a consequent nutritionally significant reduction in the intake of an essential nutrient or nutrients, consideration by qualified bodies should be given to the desirability of restoring such nutrient or nutrients to the dietary.

6. The endorsement of the following is reaffirmed: the enrichment of flour, bread, degerminated corn meal, and corn grits; the nutritive improvement of whole grain corn meal and of white rice; the retention or restoration of thiamine, niacin, and iron in processed food cereals; and the addition of vitamin D to milk, of vitamin A to table fats, and of iodine to table salt.

ACCEPTED FOODS

The following products have been accepted as conforming to the rules of the Council.

JAMES R. WILSON, M.D., *Secretary.*

Comstock Canning Corporation, Newark, N. Y.

Comstock Brand Dietetic Pack Sweet Peas

This product consists of Famous Variety peas packed in water without any added salt.

Analysis (submitted by manufacturer).—Total solids 10.7%, moisture 89.3%, protein 3.0%, crude fiber 1.4%, available carbohydrate 5.9%, and sodium 5.0 mg./100 gm.

Calories.—0.41 per gram; 11.6 per ounce.

Use.—For use in low-sodium and other therapeutic diets.

George B. Vrooman, Inc., Philadelphia.

Tux Brand Dietetic Pack Apple Sauce

This product consists of apples that are processed and packed in water without any added sugar or salt.

Analysis (submitted by distributor).—Total solids 11.3%, moisture 88.7%, fat extract 0.13%, protein (N × 6.25) 0.15%, crude fiber 0.57%, available carbohydrate 9.71%, and sodium 1.6 mg./100 gm.

Calories.—0.41 per gram; 11.7 per ounce.

Use.—For use in low-calory, low-sodium, and other therapeutic diets.

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[1] Annual Meeting of the Council on Foods, J. A. M. A. **113**: 681 (Aug. 19) 1939. Policies of the Council with Respect to the Nutritive Quality of Foods, ibid. **129**: 348-349 (Sept. 29) 1945.

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POOLED PLASMA AND JAUNDICE

Homologous serum jaundice is not a new disease, for it was first recognized nearly 70 years ago by Lurman,[1] who produced jaundice in 191 of 1,293 persons vaccinated against smallpox, by the use of human lymph stored in glycerine and derived from smallpox vesicles. A second batch of material similarly prepared did not produce jaundice. Between 1937 and 1939 there appeared in the English literature reports of several outbreaks of latent jaundice following the administration of pooled hyperimmune human serum prepared for the control of certain viral diseases. At least one of these outbreaks was serious.[2] The Ministry of Health stated that the hyperimmune serum had been refrigerated.[3] Since hyperimmune serum was not always accompanied by a reduction in attack rate of the disease for which it was administered, it was not widely used and the problem did not grow to large magnitude until World War II, when pooled human serums were introduced as the stabilizing agent in the preparation of yellow fever vaccine. In many thousands of those receiving this vaccine, homologous serum jaundice developed, with the result that the vaccine was later prepared without the addition of serum. This correction, however, was not carried out into the preparation of pooled plasma, which also came into general use during the same period.

Millions of units of pooled human plasma were processed by freeze drying, a procedure thoroughly established, even at that time, to be one of the most effective means known for the preservation of the activity and virulence of most, if not all, viruses. The continued high incidence of homologous serum jaundice following the transfusion of plasma eventually resulted in condemnation of this valuable product, because a high percentage of plasma pools contained the carrier virus. The attack rate of jaundice following use of this plasma ranged between 5 and 22%. While it was recognized that the pathogenic agent responsible for this serious complication of plasma therapy was a virus, it was not realized that the practice of lyophilizing, freezing, or refrigerating pooled plasma preserved not only the proteins of plasma but also the proteins of the virus.

At the end of World War II, large stockpiles of pooled dried plasma were on hand and were distributed among the various states for administration to patients needing plasma. The plasma was later withdrawn because of the high attack rate accompanying its administration. When it was not yet known that exposure of pooled plasma to ultraviolet light was ineffective in reducing the attack rate of homologous serum jaundice, these recalled pools were reconstituted with water, pooled into larger pools, and exposed to ultraviolet light. As a result, most, if not all, of the national stockpile of plasma was contaminated with virus. Thereafter, these massive plasma pools were lyophilized once again, preserving the virus and accounting for the higher incidence of homologous serum jaundice (22%) that occurred in Korea. Thus a condition was created that could not with greater certainty have arisen had this been the goal that was sought.

Two other errors have subsequently followed. The first was to condemn the use of plasma without appreciating that this untoward experience arose from the methods employed in the preservation of plasma and second, to consign most, if not all, plasma currently collected to a fractionation program. The protein fractions have provided an excellent tool for research. The serum albumin prepared has been of great value clinically, but its expense is essentially tenfold that incurred when community blood banks prepare the same amount of albumin as plasma from outdated whole blood. Gamma globulin, which has proved itself as a means of preventing and controlling measles epidemics, is currently under investigation for the prevention of poliomyelitis and the treatment of infectious hepatitis. The ultimate demand for gamma globulin will depend on the development of virus vaccines. Should these develop, the fractionation program may have little clinical usefulness except in the management of certain abnormalities in coagulation. While the albumin, gamma globulin, and antihemophilic globulin fractions appear free of the virus of homologous serum jaundice, this hazard continues to exist in the preparation of human prothrombin, thrombin, and fibrinogen. It is readily understandable that in serious bleeding episodes the benefits of these substances may outweigh the hazards of homologous serum jaundice that they introduce. All these substances, however, are known to produce antibodies, and when administered for long periods of time they lead to further hemorrhage.

Since most, if not all, viruses become attenuated and "die" when stored at room temperature in a liquid state, virologists have learned that a virus that they wish to preserve should not stand long under these conditions, lest they lose their activity. This same procedure is adaptable to the preparation of pooled plasma, because the plasma proteins are more stable than is generally appreciated. Room temperature storage of pooled plasma for six months or longer offers an immediate opportunity for community blood banks to salvage this product, which is currently being discarded. Studies reported in this issue by Allen, Enerson, Barron, and Sykes (page 103) demonstrate that the principal latent changes in the globulin fractions do not appear to affect the clinical usefulness of liquid plasma stored at room temperature for at least three years. It is suggested that dextran and other synthetic plasma volume expanders be used for the treatment of shock until blood is available. This will conserve plasma for use in treating hypoproteinemia in patients unable to eat and in whom rapid correction of hypoproteinemia is desirable. Many of these patients can be prepared for surgery when otherwise the operative risk may be so great that surgery seems unwise.

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[1] Lurman, F.: Eine Icterusepidemie, Berl. Klin. Wchnschr. **22**:20, 1885; quoted by Hirsch, A.: Handbook of Geographical and Historical Pathology, translated by C. Creighton, London, New Sydenham Society, 1886, vol. 3, p. 420-424.

[2] MacNalty, A. S.: Acute Infective Jaundice and Administration of Measles Serum, in Annual Report of the Chief Medical Officer of the Ministry of Health for the Year 1937, London, His Majesty's Stationery Office, 1938, p. 38. Propert, S. A.: Hepatitis After Prophylactic Serum, Brit. M. J. **2**:677, 1938. Jervis, J. J., quoted in Memorandum Prepared by Medical Officers of the Ministry of Health, Lancet **1**:83, 1943.

[3] Maycock, W. D. A. (Ministry of Health, London): Personal communication, 1950.

THE CAUSE OF DEATH

The diseases that afflict mankind, their incidence, their causes, their response to treatment, and their eventual termination are not only of scientific interest but of personal interest to all human beings. In an exhaustive study, Bogen and his associates [1] stress the inadequacies of current collections of data, pointing out that the relative frequency and seriousness of various diseases may only be surmised from fragmentary information presently available. For example, large populations have not been carefully observed from birth to death for the purpose of recording the incidence of all functional and organic disturbances or even those serious enough to cause persons to seek medical and hospital care. Questionnaire and interview surveys frequently suffer from the effects of ignorance, forgetfulness, and deliberate deception, while the records of physicians in general practice have rarely been compiled and reported. Sickness and absenteeism records are generally confined to restricted samples of a population over brief periods of time and seldom yield complete and accurate diagnostic data. For the most part, mortality statistics refer to the primary or chief cause of death as stated on death certificates; however, they do not reveal the incidence of contributory diseases that might have produced death nor do they supply information regarding the incidence of nonfatal conditions from which patients recover.

According to Bogen and his associates, more extensive and reliable information may be obtained through observation and study of large groups of patients in hospitals. It is maintained that in hospital reports emanating from various corners of the world there is a profusion of data for successive years pertaining to the frequency of various diseases and the deaths caused by them. Study of these data revealed that 1,168,139 patients discharged from the Los Angeles County General Hospital during the 30 year period 1918-1948 constituted about one-fifth of all hospitalized patients in this community and that the records of the hospital reflected changes both in population trends and in diseases and treatment during a period covering two world wars. In general, equal numbers of men and women were admitted to the Los Angeles County General Hospital, with patients of Latin-American or Mexican origin, the majority of whom were born in the United States, constituting about one-fifth of all patients treated at the hospital during the three decades. In 1918 approximately 5% of all patients were Negroes, while in 1948 the number was increased to 25% of the total. European-born patients made up about one-fifth of the total number of patients admitted to the hospital during the early years of the period, while later on this was reduced to one-twentieth of the total. Taken together, 112,409 patients, or 10% of all patients admitted, died at the hospital during the 30 year period.

Using the individual titles in the new International List of Causes of Disease and Death, the commonest diagnoses made by physicians at the Los Angeles County General Hospital during three decades consisted of normal pregnancy and delivery, with 218,158 such diagnoses, or 8% of the entire number of diagnoses. Only 642, or 0.3% of the patients with a diagnosis of normal pregnancy and parturition, died while in the hospital. Of 33,715 patients in whom a diagnosis of abortion or premature delivery was made, 435, or 1.2% of such cases, occurred in patients who died while in the hospital. During this period there was a total of 23,135 diagnoses of complications of pregnancy and childbirth, of which 2,142, or 9%, occurred in patients who died while in the hospital. In recent years the incidence of pregnancies has increased, abortions remaining the same, but the incidence of complications has declined sharply. As far as this study is concerned, improved prenatal care and the prevention of the occurrence of complications appear to have affected maternal mortality even more than has the more effective treatment of obstetric complications after they had arisen.

Traumatic injuries accompanied by multiple or unspecified wounds were the next commonest conditions encountered, with 61,643 diagnoses made and 3,396 deaths. In general, the proportion caused by traffic accidents has been found to have increased while those caused by industrial accidents or personal attacks have diminished. Bronchopneumonia, the third most frequently made diagnosis, occurred 49,330 times, or in 2% of the total number of diagnoses. Nearly half of all the patients with bronchopneumonia died while in the hospital, the mortality rate for this disease being higher than for any other. The improved prognosis attributable to the use of sulfonamides and antibiotics in later years is obscured by the large number of cases in which terminal bronchopneumonia was a concomitant of some other primary condition, such as malignant disease or cardiac failure. One-fourth of 13,654 patients with lobar pneumonia died while in the hospital; the mortality rate in later years fell sharply owing to improved treatment.

A diagnosis of pulmonary tuberculosis was made in 44,430 patients, 14,021 of whom died while in the hospital. This disease was the fourth most frequently made diagnosis, and it was third among hospital deaths. Arteriosclerotic heart disease proved to be the fifth most frequently diagnosed disease, taking place in 39,493 patients; however, it was second among causes of death in the hospital, with 14,647 patients, or 35% of the total, dying. This survey showed that cardiovascular-renal diseases and malignant tumors have become by far the most important causes of death. The aggregate of all cases of neoplastic disease numbered 101,724, with the number of deaths occurring in the hospital being placed at 27,549. The incidence in the diagnosis of neoplastic disease, especially that involving the respiratory tract, was found to have greatly increased during recent years.

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[1] Bogen, E.; Butt, E. M., and Djang, A.: Diseases and Deaths: I. A Summary of Data from the Los Angeles County General Hospital, 1918 to 1948, California Med. 78:501 (June) 1953. Bogen, E.; View, O., and Butt, E. M.: Diseases and Deaths: II. A Statistical Survey of 40,130 Autopsies at the Los Angeles County General Hospital, 1918 to 1948, ibid. 79:16 (July) 1953.

In summation, circulatory diseases were found to have caused more deaths at the Los Angeles County General Hospital during the period 1918-1948 than any other disease, with respiratory diseases, infections, nervous diseases, violence, digestive diseases, and neoplasms next in that order. Of 1,168,139 patients admitted to the hospital during this period, 112,409 persons died while in the hospital. Autopsy was performed in 40,130 cases, or in 36% of the patients who died. Autopsies were performed relatively more frequently on deceased white persons than on nonwhite patients, with more than 75% of the total number of autopsies being done on white persons, 15% on Mexicans, and about 7% on Negroes. As a rule, permission for autopsy was more difficult to obtain in the case of women than of men, in old than in young persons, and in Negro than in white patients.

Finally, it should be pointed out that these hospital data cannot be readily related to the exposed population. A hospital in a large city may draw patients from a very large area; hence, hospital deaths alone cannot be used to compute age-specific mortality rates for each cause, and these mortality records over a period of years do not provide a measure of mortality trends.[2] Age-specific rates by cause and by sex are, of course, reported by the National Office of Vital Statistics for the nation, for states, and for subdivisions of states.

THE FIFTIETH ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

The Council on Medical Education and Hospitals of the American Medical Association will convene on February 7, 8, and 9, 1954, at the Palmer House in Chicago for its 50th annual meeting held in conjunction with the Federation of State Medical Boards of the United States and the Advisory Board for Medical Specialties as the Annual Congress on Medical Education and Licensure.

A half century ago, Dr. Lewis S. McMurtry, as President of the American Medical Association, drew the attention of those attending the first conference to the fact that the American Medical Association from its inception had as its chief purpose the promotion and advancement of the standard of medical education in the United States. The establishment of the Council on Medical Education at that time was the literal carrying out of one of the most important functions of the parent organizations, namely, the American Medical Association and the medical colleges. That first meeting "was called for the purpose of bringing together the various examining and licensing powers of the states and territories, to secure mutual interchange of ideas and counsel."

The Congress on Medical Education and Licensure scheduled February 7-9, 1954, will bring some of our current problems of undergraduate and postgraduate medical education and licensure, as well as preprofessional education, to the attention of those attending in order "to secure mutual interchange of ideas and counsel." Problems connected with solving the military medical personnel needs in their relations with medical education and licensure, and other current problems of importance, will be presented. A complete program of the congress appears on another page of this issue of The Journal. Those planning to attend the congress should make their hotel reservations immediately.

REACTIVATION OF RHEUMATIC FEVER AFTER MITRAL COMMISSUROTOMY

Structural deformities of cardiac valves are the usual accompaniment of rheumatic fever. The lesion most commonly produced by rheumatic carditis is stenosis of the mitral valve. The deleterious effect of this lesion on the pulmonary circulation and the right side of the heart leads in a considerable proportion of cases to eventual cardiac decompensation and death. The idea of correcting the stenosis by direct incision was entertained by many clinicians, but it was only recently that the newly acquired experience in cardiac surgery made it possible to invade the cardiac chambers and correct the existing valvular deformity. The technical problem in treating mitral stenosis was that of relieving the stenosis without the production of significant regurgitation.

One of the important problems confronting the surgeon about to perform a mitral commissurotomy is the question of whether the rheumatic infection in a given case has completely subsided. The possibility of reactivating a latent but not recognized infection by the surgical trauma had to be taken into consideration. Glover and his associates [1] feel that this particular danger could be more or less obviated by the practice of intermittent and long-continued chemotherapy or administration of antibiotics. In a recent communication the same group [2] describe a febrile syndrome that they had observed in a number of their patients subjected to mitral commissurotomy. Thus, out of 179 patients subjected to this operation, 67 had recurrent chest pain after discharge from the hospital. In 43 of these the febrile syndrome occurred, some having pain and fever only and others having in addition such manifestations as psychoses, heart failure, cardiac arrhythmia, arthritis, and hemoptysis. There was *no history* in any of the patients in this group of a preceding sore throat, upper respiratory infection, or any unrelated infection. The authors are therefore inclined to consider these delayed phenomena as the effect of reactivation of a latent rheumatic infection set in motion by the trauma of the surgical intervention. The exact pathogenesis of this mechanism is purely speculative. Because of the frequent occurrence of this syndrome after mitral commissurotomy and its absence after any other nonrheumatic cardiac or pulmonary surgery and because of the frequent cardiac involvement, the syndrome is regarded as a reactivation of rheumatic fever.

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[2] Dickinson, F. G., and Welker, E. L.: What is the Leading Cause of Death? Two New Measures. Bulletin 64, American Medical Association, 1948. Dickinson, F. G., and Welker, E. L.: Mortality Trends in the United States, 1900-1949, Bulletin 92, American Medical Association, 1952.

[1] Glover, R. P.; O'Neill, T. J. E., and Bailey, C. P.: Commissurotomy for Mitral Stenosis, Circulation **1**: 329-342 (March) 1950.

[2] Soloff, L. A., and others: Reactivation of Rheumatic Fever Following Mitral Commissurotomy, Circulation **8**: 481-493 (Oct.) 1953.

ORGANIZATION SECTION

FIFTIETH ANNUAL CONGRESS ON MEDICAL EDUCATION AND LICENSURE

Palmer House, Chicago, Feb. 7, 8, and 9, 1954

All meetings are open to physicians and others interested in medical education

Program

Advisory Board for Medical Specialties

SUNDAY MORNING, FEB. 7, 9:00 A. M.
ROOM 14

ROBERT A. MOORE, M.D., *Presiding*

Address of the President

ROBERT A. MOORE, M.D., President, Advisory Board for Medical Specialties, St. Louis

A Sound Program for Graduate Training in Non-University Hospitals

a. *From the Hospital Viewpoint*

JOHN C. LEONARD, M.D., Director of Medical Education, Hartford Hospital, Hartford, Conn.

b. *From the Educational Viewpoint*

FORD K. HICK, Professor of Medicine, University of Illinois College of Medicine

Current Trends in Examination Procedures

JOHN T. COWLES, Ph.D., Educational Testing Service, Princeton, N. J.

The Federation of State Medical Boards of the United States

SUNDAY AFTERNOON, FEB. 7, 2:00 P. M.
RED LACQUER ROOM

JOHN N. MCCANN, M.D., *Presiding*

Roll Call of Member Boards and Associate Members

Report of the President

JOHN N. MCCANN, M.D., Treasurer, Ohio State Medical Board, Youngstown

Report of the Secretary-Treasurer and Editor of the Federation Bulletin

WALTER L. BIERRING, M.D., Des Moines, Iowa

Appointment of Committees

Committee on Essentials of a Modern Medical Practice Act

a. *Report of the Chairman*

BRUCE UNDERWOOD, M.D., Secretary, Kentucky State Board of Health

b. *Highlights of the Survey*

GEORGE E. HALL, Staff Associate, Bureau of Legal Medicine and Legislation, American Medical Association

The Educational Component of Medical Licensure

WILLARD C. RAPPLEYE, M.D., Dean, Columbia University College of Physicians and Surgeons

The Relation of the Hospital Internship to Licensure

S. HOWARD ARMSTRONG, M.D., Director of Medical Education, Cook County Hospital, Chicago

Council on Medical Education and Hospitals American Medical Association

MONDAY MORNING, FEB. 8, 9:00 A. M.
RED LACQUER ROOM

H. G. WEISKOTTEN, M.D., *Presiding*

Address of the Chairman: Fifty Years of Council Activity

H. G. WEISKOTTEN, M.D., Chairman, Council on Medical Education and Hospitals, American Medical Association

Bridging a Gap

EDWARD J. MCCORMICK, M.D., President, American Medical Association

Solving the Problem of Military Medical Personnel Needs

FRANK B. BERRY, M.D., Assistant Secretary of Defense (Health and Medical)

Highlights from the Survey on Preprofessional Education

AURA E. SEVERINGHAUS, Ph.D., Associate Dean, Columbia University College of Physicians and Surgeons

How Bad Is the Distribution of Physicians?

FRANK G. DICKINSON, Ph.D., Director, Bureau of Medical Economic Research, American Medical Association

Developments in the National Fund for Medical Education

(Speaker to be Announced)

American Medical Education Foundation

LOUIS H. BAUER, M.D., President American Medical Education Foundation

MONDAY AFTERNOON, FEB. 8, 12:30 P. M.
CRYSTAL ROOM

SUBSCRIPTION LUNCHEON

As the Twig Is Bent. Panel Discussion on Professional Orientation

LEO S. BROWN, Moderator, Director of Public Relations, American Medical Association

MONDAY AFTERNOON, FEB. 8, 2:15 P. M.
RED LACQUER ROOM

FRANKLIN D. MURPHY, M.D., *Presiding*

Postgraduate Medical Education

A Preview of the Principal Findings of the American Medical Association's Survey of Postgraduate Medical Education

DOUGLAS D. VOLLAN, M.D., Council on Medical Education and Hospitals, American Medical Association

Panel Discussion: The Objectives of Postgraduate Medical Education

GEORGE AAGAARD, M.D., Dean, Southwestern Medical School of the University of Texas and Chairman, Committee on Continuation Education, Association of American Medical Colleges
ROSCOE PULLEN, M.D., Dean, University of Missouri School of Medicine
U. R. BRYNER, M.D., President, American Academy of General Practice, Salt Lake City

Panel Discussion: How to Achieve These Objectives

JOHN B. TRUSLOW, M.D., Dean, Medical College of Virginia
ROBERT PARKIN, M.D., Director of Postgraduate Education, University of Wisconsin Medical School
MAHLON DELP, M.D., Director of Postgraduate Education, University of Kansas School of Medicine
JOHN CONLIN, M.D., Director of Public Relations, Massachusetts Medical Society

Panel Discussion: The Three "F's"; Facilities, Faculty, and Finance; The Requirements of Postgraduate Programs

ROBERT HOWARD, M.D., Director of Postgraduate Education, University of Minnesota Medical School

FRODE JENSEN, M.D., Assistant Dean, New York University Postgraduate School of Medicine

FRANKLIN AMOS, M.D., Director of Professional Education, New York State Department of Health

Summing Up

FRANKLIN D. MURPHY, M.D., Chancellor, University of Kansas

MONDAY AFTERNOON, FEB. 8, 5:00 P. M.
ROOM 14

Reception for Registrants of the Congress by the American Medical Association

The Federation of State Medical Boards of the United States

MONDAY EVENING, FEB. 8, 7:00 P. M.
CRYSTAL ROOM

FEDERATION DINNER

JOHN N. MCCANN, M.D., *Toastmaster*

Address

EDWARD L. TURNER, M.D., Secretary, Council on Medical Education and Hospitals, American Medical Association

TUESDAY MORNING, FEB. 9, 9:00 A. M.
RED LACQUER ROOM

JOHN N. MCCANN, M.D., *Presiding*

Address of the President

JOHN N. MCCANN, M.D., President, Federation of State Medical Boards of the United States

Is Osteopathy a Cult?

GEORGE W. COVEY, M.D., Former Member, Nebraska Board of Medical Examiners

Report of First World Conference on Medical Education

WALTER L. BIERRING, M.D., Secretary-Treasurer, Federation of State Medical Boards of the United States

CREIGHTON BARKER, M.D., Secretary, Connecticut Medical Examining Board

M. H. CRABB, M.D., Secretary, Texas Board of Medical Examiners

CLINTON GALLAHER, M.D., Secretary, Oklahoma Board of Medical Examiners

E. S. HAMILTON, M.D., Member, Medical Examining Committee, Illinois Department of Registration and Education

J. J. MOORE, M.D., Member, Medical Examining Committee, Illinois Department of Registration and Education

WILLIAM J. SHAW, M.D., Vice President, Missouri Board of Medical Examiners

Evaluation of Credentials Submitted by Foreign Medical Graduates

STILES D. EZELL, M.D., Secretary, New York Board of Medical Examiners

Report of Committee on Licensure Problems

Representing:

Association of American Medical Colleges

The Federation of State Medical Boards of the United States

Council on Medical Education and Hospitals, American Medical Association

CHARLES A. DOAN, M.D., General Chairman, Dean, Ohio State University College of Medicine

CHARLES L. SHAFER, M.D., Chairman, Pennsylvania Board of Medical Education and Licensure

TUESDAY AFTERNOON, FEB. 9, 12:30 P. M.
CRYSTAL ROOM

JOHN N. MCCANN, M.D., *Presiding*

FEDERATION LUNCHEON

GENERAL SESSION

Reports of Committees: Executive, Resolutions, Nominations and Miscellaneous

ELECTION OF OFFICERS

INSTALLATION, PRESIDENT-ELECT, ELMER E. SCHNOOR, M.D., Grand Rapids, Mich.

THE MEDICAL SOCIETY OF NEW JERSEY

To permit readers of THE JOURNAL *to become better acquainted with the activities of state medical associations articles describing them will appear from time to time in these pages.*—ED.

Chronologically the oldest state medical society in the United States, the Medical Society of New Jersey (then called the New Jersey Medical Society) was founded July 23, 1766, at a meeting in Duff's Tavern in New Brunswick. The 14 physicians who adopted and signed the "instrument of association" that night met in response to a notice, published in the New York *Mercury*, June 27, which read: "A large body of the practitioners in physic and surgery in East New Jersey, having agreed to form a society for the advancement of their profession and the promotion of public good, hereby request and invite every gentleman of the profession in the province to attend a meeting at Mr. Duff's Tavern in the City of New Brunswick on Wednesday, July 23, at which time and place, the Constitution and Regulations of the Society are to be settled and subscribed." The society, which came into existence under the provincial government, derived its original charter from the King of England. Almost a century later (1864) its present charter was granted by the legislative act of the state of New Jersey. In the interim, the society's existence had been recognized by law in 1783; in 1790 it was incorporated by a legislative act that conferred general powers of property-holding; and in 1816 a second act of incorporation authorized the formation of district and county societies that would have power to examine candidates for licensure to practice medicine, after which successful candidates were granted licenses by the president of the state society, authorizing them to practice anywhere in New Jersey. The authority to grant the degree of "Medical Doctor," granted in 1825, is still in force, making the Medical Society of New Jersey the only agency in New Jersey that may confer the M.D. degree.

No sooner had the society's first project, the adoption of a fee schedule, been proposed, than "some evil-minded persons threw an odium on the proceedings tending to prejudice the minds of the inhabitants against so laudable an institution as the New Jersey Medical Society." The society's endorsement of the fee schedule was consequently held up until 1784, when the fee table was revived, its figures translated into the new United States currency, and a special committee appointed to tell the public why it was in their interest to have such a schedule, explaining that the recommended fees were maximal and that "every member is at liberty to abate what part of such bills he may think proper on account of poverty, friendship or other laudable motives." Good public relations thus established, the society continued to meet semiannually, holding a "southern" meeting in Burlington and a "northern" meeting in Princeton or New Brunswick. In 1790, however, opposition arose from a "rebellious" member, Paul Micheau, who opened a one-man medical school in which he gave one lecture a day for two months, charged $25 tuition, and sought to qualify his graduates as doctors of medicine. The attempts of Micheau and others to establish rival organizations were short lived, and in 1807 the New Jersey profession was reunited.

In 1819 the society took part in the establishment of the first U. S. Pharmacopeia; in 1837 it began stressing the need for a state hospital for the mentally ill, its subsequent report leading to the establishment at Trenton in 1848 of one of the first psychiatric hospitals in the country. In 1848, a year after its representatives had participated in the founding of the American Medical Association at Philadelphia, the *New Jersey Medical Reporter* was published and was made an official medium for publication of the society's activities. In 1859 the society established its own publication, the *Transactions,* which was succeeded in 1903 by the *Journal of the Medical Society of New Jersey.*

Since 1766, the society has been in continuous existence with the exception of the period between November, 1775, and November, 1781, when, half the membership being in the service of the American Army, regular meetings were suspended, and the period between November, 1795, and June, 1807. Its membership has grown to 5,476, an increase of about 100% having been noted in the past 20 years. The headquarters building at 315 W. State St., Trenton, houses the executive, legislative, and editorial offices and meeting rooms for the board of trustees and committees. Its officers for the current year are Dr. Henry B. Decker, Camden, president; Dr. Elton W. Lance, Rahway, president-elect; Dr. Vincent P. Butler, Jersey City, first vice-president; Dr. Lewis C. Fritts, Somerville, second vice-president; Dr. Marcus H. Greifinger, Newark, secretary; and Dr. Jesse McCall, Newton, treasurer.

Headquarters of New Jersey Medical Society.

Among the special projects in which the society is engaged are physicians placement service, plans for a medical school in New Jersey, emergency medical service, monthly membership newsletter, quarterly newsletter to cooperating agencies, health hints to newspapers, junior health hints to schools, state judicial council, county arbitration committees and the publication of a membership directory.

HAWAIIAN TOUR FOLLOWING SAN FRANCISCO MEETING

The Hawaiian Medical Association has announced a Scientific program for physicians who will take part in the American Medical Association's 13-day Hawaiian Holiday Tour, which will follow the annual A. M. A. meeting in San Francisco next June 21-25. The party will leave San Francisco aboard Pan American Airways Strato Clippers and United Air Lines Stratocruisers at 11:45 on the night of Friday, June 25th—the closing day of the convention—and arrive in Honolulu early the next morning. The party will stay at the Royal Hawaiian Hotel on Waikiki Beach. The return trip, scheduled to start at 4 p. m. on July 3, will be made on the luxurious Matson Liner, S. S. Lurline, which will dock in Los Angeles on July 8. All of the reservations are being handled for the A. M. A. by William M. Moloney, general agent, Room 711, 105 West Adams Street, Chicago.

According to Dr. Walter B. Quisenberry of the Department of Health of the Islands, the Hawaiian Medical Association has arranged for the setting up of an information desk in the lobby of the Royal Hawaiian Hotel to handle mail and telephone calls on the guests' arrival. The scientific program will be held in the Mabel Smyth auditorium from 8:30 a. m. to 10 p. m. on Monday, June 28. This program will be handled by a panel made up of surgeons and internists, who will be in the visiting party, as well as specialists practicing in the Islands. Audience participation will be encouraged. The afternoon and evening of June 28 and the morning of June 29 will be free. Between 2:30 and 5 p. m. on Tuesday, June 29, the society has planned a local scientific presentation at the Royal Hawaiian Hotel.

There will be a short address of welcome by Dr. Edwin K. Chung-Hoon, president of the Hawaii association. He will also give a pictorial review of leprosy and will be followed by Dr. Nils P. Larsen, whose subject will be "Medicine in Early Hawaii." Dr. Paul Gebauer will show a humorous movie entitled "Techniques of Surgery." A social hour, dinner, and entertainment will follow at the Niumalu Hotel. The evening will close with dancing. Dr. Quisenberry stated that the remainder of the time, beginning June 30 and ending July 3, will be free for the doctors and their wives to visit the other islands or enjoy the beach. "This will give the doctors time," he said, "to browse through orchid nurseries, watch Japanese archery, look into the crater of a live volcano, drive through jungles where ferns grow 30 feet high, and enjoy some of the water sports for which Honolulu is famous."

THE SCIENTIFIC EXHIBIT—SAN FRANCISCO MEETING

Among the special features that the Committee on Scientific Exhibit is planning for the San Francisco Meeting is the Special Exhibit on Fractures presented by a committee of which Dr. Gordon M. Morrison, Boston, is chairman. This year the committee will include "dash board injuries" as one of the topics.

A question and answer conference on heart disease is being planned in cooperation with the American Heart Association, as well as several exhibits on this subject. Several of the sections of the Scientific Assembly are planning special features, including the Section on General Practice with an exhibit on the "preceptor training program" and the Section on Pathology and Physiology with demonstrations on fresh pathology specimens.

The motion picture program is being arranged by the Committee on Medical Motion Pictures. Requests for time on the program should be sent directly to Mr. Ralph P. Creer, Secretary of the Committee, American Medical Association, 535 N. Dearborn St., Chicago 10, as early as possible.

Attention is called to the fact that applications for space in the Scientific Exhibit at the San Francisco Meeting will close on Jan. 18. Applications received after that date will be placed on the waiting list to be considered by the committee if space is available. Exhibits will be arranged in groups corresponding to the 21 sections of the Scientific Assembly. It is hoped, however, that each exhibit will be broad enough in scope to be of interest to physicians in general practice and to specialists other than those in whose section the exhibit is shown. Application blanks may be obtained from Section Representatives or from the Director, Scientific Exhibit, American Medical Association, 535 N. Dearborn St., Chicago 10.

NEW A. M. A. PUBLICATIONS

Bibliography on Medical Aspects of Civil Defense.—Prepared by the Council on National Emergency Medical Service.

Foreign Medical Schools.—This pamphlet, prepared by the Council on Medical Education and Hospitals, covers the current status of foreign medical schools and contains sections discussing medical licensure, immigration, medical practice in the United States, graduate training, the responsibility of hospitals in the selection of interns and residents, and undergraduate medical study in the United States and in foreign medical schools.

MEDICAL NEWS

ARIZONA

Annual Cancer Seminar.—The second annual cancer seminar of the Arizona division of the American Cancer Society will be presented Jan. 14-16 at Paradise Inn in Phoenix. Panel discussions are scheduled on the following topics: "Recent Advances in Cancer Therapy," "Neoplasms of the Central Nervous System," "Carcinoma of the Cervix," "Carcinoma of the Breast," "Exfoliative Cytology," "Surgical Methods for Relief of Intractable Pain," "Carcinoma of the Lung," "Trends in Cancer Research," "Leukemia and Lymphomas," and "Tumors of Childhood." Participants include Paul C. Aebersold, Ph.D., of the Atomic Energy Commission, Oak Ridge, Tenn.; and Drs. Percival Bailey, Chicago; Osborne A. Brines, Detroit; Charles S. Cameron, New York; Anthony R. Curreri, Madison, Wis.; Michael E. DeBakey, Houston, Texas; Leo H. Garland and David A. Wood, San Francisco; Elisha S. Gurdjian, Detroit; Joe V. Meigs and Ovar Swenson, Boston; and Eugene P. Pendergrass, Philadelphia. Moderators will be Drs. Ralph H. Fuller, Edward M. Hayden, and Hugh C. Thompson, all of Tucson, and Preston T. Brown, John A. Eisenbeiss, Douglas D. Gain, John R. Green, Dermont W. Melick, and Onie O. Williams, of Phoenix. For reservations write to the Arizona Division, American Cancer Society, 1429 N. First St., Phoenix.

CALIFORNIA

Bequest to Hospital.—More than $155,000 will go to the Shriners' Hospital for Crippled Children in San Francisco under terms of the will of the late J. Harold Brown, an Oakland banker.

Personal.—Dr. Maxwell Rosenblatt, Los Angeles, has been appointed head public health physician in the division of tuberculosis control of the county health department.——The medical faculty of the University of Freiburg in Baden, Germany, in collaboration with the United States Education Commission for Germany in Düsseldorf, has invited Dr. Robert Wartenberg, San Francisco, to be guest professor for one year at the university, where he was a staff member until 1935.——William Walter Greulich, Ph.D., science adviser to the U. S. Commissioner for Germany, has been appointed chairman of the U. S. Educational Commission in the Federal Republic of Germany. Dr. Greulich is on leave of absence from Stanford University School of Medicine, Stanford University-San Francisco, where he is professor of anatomy.——Horace W. Magoun, Ph.D., professor of anatomy, University of California at Los Angeles School of Medicine, has been awarded the 1953 United Cerebral Palsy-Max Weinstein award for his studies of factors promoting regeneration of nerve fibers and of the physiology of the cerebral cortex and basal ganglia in relation to cerebral palsy. The award, which was presented at the organization's annual convention, consists of a plaque and $1,000 in cash.

Course on Endocrine Disease.—"The Dynamics of Endocrine Disease," a graduate assembly designed to emphasize clinical physiology, diagnosis, and treatment, will be presented Feb. 8-13, at the Highland-Alameda County Hospital, 2701-14th Ave., Oakland, under the auspices of the committee for graduate medical education of the Alameda-Contra Costa Medical Association and the Institute for Metabolic Research of the Highland-Alameda County Hospital. Tuition is $100. Enrollment is limited to 100 students. Out-of-state faculty members include: Dr. Elmer Alpert, Rahway, N. J., Dr. Edwin B. Astwood, Boston, Dr. Edgar S. Gordon, Madison, Wis., Dr. George M. Guest, Cincinnati, Edwin E. Hays, Ph.D., Chicago, Dr. Edward E. Henderson, Bloomfield, N. J., and Dr. Frank H. Tyler, Salt Lake City. Panel discussions will include "Growth, Including a Consideration of Hormones in Relation to Cancer," "Principles and Practice of Diabetic Management," and "ACTH and Cortisone in Clinical Medicine." An endocrine clinic will be held Saturday. A social hour, 6:30 p. m., courtesy of Merck and Company, will precede the banquet at the Villa de la Paix in Oakland. Dr. Guest will have as his subject "French Wine Country," and Dr. Salvatore P. Lucia, San Francisco, will present "Some Wayward Tendrils of the Vine."

FLORIDA

Narcotic Violation.—Dr. Matthew Arnow, Eustis, pleaded guilty in the U. S. District Court at Ocala, Oct. 20, 1953, to a charge of violating the federal narcotic law. Sentence was suspended, and he was placed on probation for a period of two years.

Fellowship in Cancer Research.—Dr. J. Ernest Ayre, director, Cancer Institute at Miami, announces that a grant of $3,400 has been made to the institute to establish the Lawrence A. Wien fellowship in cancer research. This will enable the research division of the institute to extend its investigations in the biochemical field.

Society News.—At its October meeting in Miami, the Florida Pediatric Society elected Dr. C. Jennings Derrick, West Palm Beach, president, Dr. Lewis T. Corum, Tampa, vice-president, and Dr. Wesley S. Nock, Coral Gables, secretary-treasurer. ——The South Florida chapter of the Arthritis and Rheumatism Foundation was recently organized in Miami. The medical and scientific committee, under the chairmanship of Dr. Joseph F. Keeley Jr., Miami, will follow the broad policy of the national foundation with emphasis on local needs. Among the charter members are Drs. Elwin G. Neal and Robert F. Farrington, Miami, and Frederick P. Poppe, William P. Smith, and Jack Cleveland, Coral Gables.

ILLINOIS

Society News.—At the annual convention of the Illinois Academy of General Practice Dr. Pliney R. Blodgett, Chicago Heights, was named president, and Dr. Dewey M. Roberts, Alton, president-elect.

Narcotic Violation.—Dr. Henry O. Carlton, Benton, pleaded guilty in the U. S. District Court at Benton to an indictment charging violation of the federal narcotic law. On Nov. 19, 1953, sentence was suspended, and he was placed on probation for three years and fined $500.

Chicago

Society News.—At the meeting of the Chicago Neurological Society, International Relations Center, 116 S. Michigan Ave., 8 p. m., Jan. 12, case presentations will be made on hemispherectomy for infantile hemiplegia, extradural hemorrhage, preventive psychiatry in Korea, and the metabolism of convulsions.

Public Health Forums.—After a poll of its readers, the Chicago *Tribune* presented a series of free public health forums Dec. 28 and 29, 1953. Physicians participated in panel presentations on heart disease, cancer, arthritis and rheumatism, and colds and other respiratory infections. Each 90 minute forum was followed by a one hour question and answer period. Broadcasts and telecasts were made.

Doctors Emergency Service.—The 1954 placards are now available to participating physicians on the Doctors Emergency Service panel. The placard gives the physician traffic privileges in areas policed by the Chicago Police Department but not in zones policed by the Chicago Park District. Physicians listed on the medical emergency service panel of the Chicago Medi-

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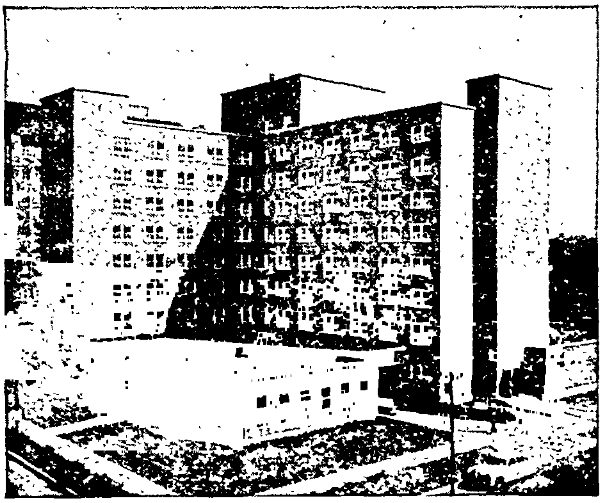
Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

cal Society may have the 1954 placard by writing the Doctors Emergency Service, 86 E. Randolph St., Chicago 1, or applying in person at the society office.

Illinois Student Residence Hall.—The University of Illinois announces that students enrolled in three medical schools, the Stritch School of Medicine of Loyola University, the University of Chicago School of Medicine, and the University of Illinois College of Medicine, have moved into the new residence hall that has been opened in the Medical Center District, 818 S. Wolcott Ave. The nine-floor building can accommodate 405 students. Rooms also will be rented on a daily basis to official visitors of the university if vacancies occur. There are 196 double and 13 single rooms. Special facilities include a laundry room equipped with automatic washers and dryers. Food service facilities, including a cafeteria, dining rooms, kitchen, and snack bar, are located on the first floor. In the lounge on the second floor is a 27 in. television set. The building is the fourth new facility to be opened in 1953 in the rapidly expanding, 35 acre medical center district. Previously placed into operation were the University of Illinois staff apartment building; Kidston House, a staff apartment building at Presbyterian Hospital; and the 500-bed Veterans Administration Hospital.



University of Illinois Residence Hall.

KANSAS

Society News.—At a recent meeting in Kansas City, the Kansas Trudeau Society named Dr. Charles Pokorny, Halstead, president-elect, and Dr. Monti L. Belot Jr., Lawrence, secretary-treasurer. Dr. E. L. Andre Baude, Topeka, serves as president.

State Commission on Alcoholism.—The Kansas Commission on Alcoholism, established by law passed during the 1953 session of the legislature, announces the opening of its offices at 315 W. Fourth St., Topeka. Activities will be administered by a board that includes Drs. Karl E. Voldeng, Wellington, George W. Jackson, Topeka, and Z. Miles Nason, Kansas City. The duties of the commission are (1) to study the problem of alcoholism, including methods and facilities available for the care, custody, detention, treatment, employment, and rehabilitation of alcoholics; (2) to provide for research into factors leading to alcoholism; (3) to promote meetings for the discussion of problems confronting clinics and agencies engaged in the treatment and rehabilitation of alcoholics; (4) to disseminate information on alcoholism for the assistance and guidance of residents and courts of the state; (5) to suggest reasonable regulations for the care, treatment, and discipline of patients and persons committed to state institutions because of alcoholism; and (6) to make regulations for the care, treatment, and discipline of patients and persons committed to the commission's care and for the management of the commission's affairs.

MARYLAND

Society News.—At the dinner meeting of the Otolaryngological Section of the Baltimore City Medical Society Jan. 12, 6:30 p. m., in the Johns Hopkins Club, Homewood Campus, Dr. Robert Smith, chief of surgery, National Cancer Institute, will speak on surgical approach to head and neck cancer in man. Discussion will be by Dr. Grant E. Ward, Baltimore.

Personal.—Dr. Emil Novak, assistant professor of obstetrics and gynecology, emeritus, Johns Hopkins University School of Medicine, Baltimore, gave the second annual Medical Foundation lecture, "Application of Physiologic and Pathologic Principles to Surgery of the Ovary," in South Bend, Ind., Nov. 13, 1953. The following day, he was moderator of a seminar on gynecologic and obstetric pathology sponsored jointly by the South Bend Medical Foundation and the Indiana Association of Pathologists on the campus of Notre Dame University.

McCormack Award to Dr. Riley.—Dr. Robert H. Riley, Baltimore, state director of public health for the last 25 years, was honored by the National State and Territorial Health Officers Association at its meeting in Baltimore, Nov. 9. The Arthur T. McCormack award, which was presented to him, points out that his labors "have been a guide for health officers throughout the country in planning the organization and administration of medical services which have strengthened the total program of public health." Dr. Riley became affiliated with the state health department in 1914; from 1920 to 1925 served as director of the department's bureau of communicable diseases; from 1925 to 1928 as assistant director of the department; and in 1928 was named state director. In 1939 he was given a life tenure in this position by legislative act.

MASSACHUSETTS

House Officers' Lecture.—The House Officers' Association, New England Center Hospital, Boston, announces that on Jan. 11 at 7 p. m. Dr. Harold G. Wolff, professor of medicine (neurology), Cornell University Medical College, New York, will discuss "Headache Mechanisms" in the Stearns Auditorium of New England Center Hospital. All interested persons are invited.

Dr. Tedeschi Goes to Philadelphia.—Dr. C. Giorgio Tedeschi, assistant professor of pathology, Boston University School of Medicine, has been named head of the division of pathology, Hahnemann Medical College and Hospital, Philadelphia. Dr. Tedeschi, who came to America in 1939 from Italy where he had been professor of pathology at the University of Ferrara, served as a fellow in pathology at Yale University School of Medicine, New Haven, Conn., and at the Mt. Sinai Hospital, New York. He has been director of laboratories and research at the Framingham (Mass.) Union Hospital and consultant in pathology to the Framingham Heart Program of the U. S. Public Health Service as well as attending in pathology to the Veterans Administration Hospital.

MICHIGAN

Symposium on Blood.—The Wayne University College of Medicine, Detroit, announces that its third annual Symposium on Blood will be held Jan. 9 in the auditorium, 645 Mullett St., Detroit. Out-of-state physicians who will participate in the program include Joseph M. Hill, Dallas, Texas; Herbert S. Bowman, Robert T. Carroll, and Leandro M. Tocantins, Philadelphia; Benjamin Alexander, Robert Goldstein, Anne G. LeBolloc'h, Louis K. Diamond, and Wayne H. Borges, Boston; and Solomon Sherry, Cincinnati. Sir Lionel Whitby, vice-chancellor of Cambridge University in England and former president of the International Society of Hematology, will present "Some Quantitative Problems of Haemopoiesis."

Angus McLean Award.—The Academy of Surgery of Detroit offers the Angus McLean prize award of $200 for the best essay on a surgical problem submitted by a resident or an intern of a hospital in the greater Detroit area. The essay may cover either clinical or research investigations; must be original rather than a review of previous work, should not exceed 3,000 words, and must be typewritten, double-spaced, in triplicate. The award will be made at the annual meeting of the academy at the Detroit Athletic Club, May 13, when the essay will be read. The essay may be submitted for publication to the journal of the author's choice. Manuscripts should be sent to the secretary, Dr. Howard T. Howlett, 868 Fisher Bldg., Detroit 2, not later than March 1.

Annual Rural Health Conference.—The seventh annual Michigan Rural Health Conference will be held Jan. 14-15 at the Bancroft Hotel, Saginaw. The central theme will be the health problems arising in Michigan as a result of industrial growth in small communities. Dr. John R. Rodgers, Bellaire, general chairman, points out that more than 400,000 Michigan people have moved from urban centers to rural areas during the past 10 years but are not farming. The Thursday morning session will include the address "The Influence Health Maintenance Programs in Industry Have on Community Health," by Dr. Max R. Burnell, medical consultant to General Motors Corporation, Detroit. A panel discussion with audience participation will be held Thursday, 1:30 p. m., and group discussions are scheduled at 3:15 p. m. on community sanitation, community health planning, rural and community safety, medical care facilities, and school health programs. At the banquet Thursday, 6:30 p. m., the Michigan Health Council will present its award to a public health person, the news article awards, and the Andrew S. Brunk award. The conference is financially sponsored by the Michigan Foundation for Medical and Health Education and cosponsored by more than 100 Michigan organizations. Registration fee is $1, and the annual banquet fee is $2.85 (tax included).

NEW YORK

Hospital News.—The St. Francis Sanatorium for Cardiac Children in Roslyn, Long Island, offers seminars in cardiovascular physiology and treatment of heart diseases in children, Jan. 12, Feb. 9, March 9, April 13, and May 11.

Dr. Adeline Wescott Honored.—On her 80th birthday, Nov. 17, Dr. Adeline M. Wescott participated in a panel discussion on diabetes at St. Luke's Hospital, Newburgh, which was followed by a surprise ceremony in her honor, at which telegrams of congratulations were received from Drs. Elliot P. Joslin, Boston, and Charles Best, Toronto, Canada. The board of managers of St. Luke's Hospital have named the laboratories, which Dr. Wescott originated and developed, the Adeline M. Wescott Laboratories.

District State Health Offices.—The Batavia District Office, New York State Department of Health, has been relocated at Lockport to serve the counties of Orleans and Niagara, exclusive of the City of Niagara Falls. The relocation was brought about by the establishment in Genesee County of a county health department. The new Niagara-Orleans district will come under the supervision of the Buffalo Regional Office of the state health department. Approval has been granted for the establishment of a Clinton County Health district, the necessary first step in setting up a county health department in Clinton County. The new county health department, the 16th in the state, was scheduled to begin operations Jan. 1.

New York City

Seminars in Hematology.—The Mount Sinai Hospital announces that the following seminars will be held in Blumenthal Auditorium (entrance through the hospital gardens, 5th Ave. & 100th St.) on Wednesdays at 8:30 p. m.:

Jan. 20, Fundamental Stimulus for Erythropoiesis, Walter S. Root, Ph.D., Columbia University College of Physicians and Surgeons, (discussion: Daniel Stats, Mount Sinai Hospital).

Feb. 17, Vitamin B_{12}, Folic Acid, and Citrovorum Factor: (a) Metabolic Aspects, Mr. Harry Broquist, Lederle Laboratories, Pearl River, N. Y.; (b) Clinical Aspects, Maurice Strauss, Veterans Administration Hospital, Boston.

March 17, Hemophilia: Panel Discussion, Benjamin Alexander, Harvard Medical School, Boston; Leandro M. Tocantins, Jefferson Medical College of Philadelphia, and Martin C. Rosenthal, Mount Sinai Hospital.

April 21, Advances in Knowledge of Hemolytic Anemia, Lawrence E. Young, University of Rochester School of Medicine and Dentistry, (discussion: Lawrence I. Schwartz, Mount Sinai Hospital).

Personal.—Dr. Herbert S. Kupperman has been promoted from research associate to adjunct assistant professor in therapeutics of the New York University College of Medicine. Before joining the staff of the university in 1947, Dr. Kupperman was with the University of Georgia School of Medicine, Augusta.——Dr. I. Newton Kugelmass addressed the student body and faculty of the University of Montreal Faculty of Medicine, Dec. 1-2, 1953, on infant nutrition and control of hemorrhagic disorders in children.——Dr. Morris A. Jacobs has been appointed senior general medical superintendent of the municipal department of hospitals to succeed Dr. I. Herbert Scheffer, who retired from the department Nov. 1, 1953, to become executive director of Miriam Hospital in Providence, R. I. Dr. Jacobs has had 26 years of service in the department of hospitals.

OHIO

Memorial to Dr. Shank.—The University of Cincinnati has announced that the contemplated upper deck enlargement of the James Gamble Nippert Stadium will be known as the Reed A. Shank Pavilion, in tribute to the late Dr. Shank, a member of the board of directors of his alma mater, the University of Cincinnati. Dr. Shank died at the Miami-University of California football game in Nippert Stadium, Nov. 26, 1953.

Annual Academy Lectures.—In its annual series of monthly lectures the Fort Steuben Academy of Medicine, meeting in the Fort Steuben Hotel, Steubenville, Jan. 12, will hear "Behavior Disorders of Children" by Dr. Alexander A. Weech, Cincinnati. Physicians, interns, and graduate nurses are invited. Information may be obtained from Dr. Edward B. Weinman, secretary-treasurer, National Exchange Bank Building, Steubenville.

PENNSYLVANIA

Booklet on Cancer Detection.—The commission on cancer of the Medical Society of the State of Pennsylvania is distributing to commonwealth physicians a new booklet "Five Points for the Detection of Cancer," which outlines the procedure of an office examination to detect cancer. An examination, which can be done in a physician's office and by which most accessible cancers can be diagnosed, is being encouraged by the commission in cooperation with the Pennsylvania division of the American Cancer Society and the division of cancer control of the Pennsylvania State Department of Health. Distribution of the booklet is the first phase of a renewed large-scale effort to alert the profession and the public to the importance of early diagnosis and prompt treatment in cancer control. Dr. J. William White, Scranton, is chairman of the commission.

Philadelphia

Issue Dedicated to Perry Pepper.—The November issue of the *Medical Clinics of North America*, the Philadelphia Number, contains a symposium on clinical medicine from Philadelphia, with a dedicatory foreword to Dr. Oliver H. Perry Pepper, emeritus professor of medicine, University of Pennsylvania School of Medicine, Philadelphia, which reads in part: "The contributions contained in this volume represent the admiration, respect and affection in which you are held by those whom you have influenced during the 45 years of your professional life. Their name is legion."

Dr. McCall Goes to Louisiana.—Dr. Milton Lawrence McCall, assistant professor of obstetrics and gynecology, Jefferson Medical College, has been appointed professor of obstetrics and gynecology, Louisiana State University School of Medicine, New Orleans, and a visiting physician in obstetrics and gynecology at Charity Hospital of Louisiana, New Orleans. Dr. McCall, who will head the department, also served as associate chief of obstetrics and gynecology at Episcopal Hospital, adjunct in obstetrics and gynecology at Jefferson Medical College Hospital, and assistant visiting obstetrician and gynecologist at Philadelphia General Hospital.

University News.—Dr. Norbert J. Roberts, medical director of the Pennsylvania Railroad Company, has been named assistant professor of occupational medicine in the department of public health and preventive medicine, University of Pennsylvania School of Medicine, Philadelphia.——The Home of the Jewish Aged in Philadelphia has been affiliated with Hahnemann Medical College and Hospital of Philadelphia for the purpose of research in the problems of old age. Dr. Nathan Blumberg, medical director of the home, has been appointed professor of geriatrics at Hahnemann Medical College, and other physicians on the staff of the home will serve as faculty members at Hahnemann, specializing in geriatrics. Hahnemann senior medical students will study geriatrics at the home and serve as clinical clerks.——The Woman's Medical College of Philadelphia has received a $30,000 grant from the W. K. Kellogg Foundation of Battle Creek, for a program of teaching and research in preventive medicine. In August ground was broken for the $115,000 Martha Tracy Preventive Medicine Wing, a two-story unit to house the department, which is under the direction of Dr. Katharine R. Boucot, professor of preventive medicine.——Dr. Aims C. McGuinness, dean, Graduate School of Medicine of the University of Pennsylvania, announces that 84 physicians from 26 foreign countries are included in the total enrollment. Dr. Michael Harty, of Cambridge University, England, will be a visiting lecturer in anatomy at the school during the current year, and Dr. Francis J. W. Roughton, professor of colloid science at Cambridge University, England, will be a guest lecturer in physiology. Dr. Louis E. Silcox, professor of clinical otolaryngology, has been named chairman of the department of otolaryngology. He takes the place formerly held by Dr. Edward H. Campbell, who remains as a member of the faculty to carry out his full teaching schedule.

RHODE ISLAND

Physicians, Press, and Radio Cooperate.—The Rhode Island Medical Society has adopted a code of cooperation between physicians, the press, and radio in Rhode Island, whereby (1) the officers of the society or other representatives specifically designated agree to be available to the representatives of the press and radio to supply authentic information on matters pertinent to health and medicine; (2) officers, designated spokesmen, or committee chairmen of the Rhode Island Medical Society may be quoted by name in matters of public interest for the purpose of authenticating the given information; (3) publicity in the press and radio and other public media must be avoided by all members of the society except under such circumstances; (4) in case of illness of a person in whom the public has a legitimate interest the wishes of the attending physician or surgeon will be respected as to the use of his name; and (5) the society will encourage hospitals to have someone available at all times to deal with the representatives of the press and radio. The press and radio are requested (1) to quote accurately information by physicians and spokesmen for the medical societies and hospitals; (2) to avoid the use of material designed merely to exploit the doctor or hospital or patient; (3) to refrain from any demands that might jeopardize the patient's health or the patient-physician relationship; and (4) to obtain authentic information from qualified sources before the broadcasting or publication of such matters concerning members of the society.

VIRGINIA

New Faculty Members.—New members appointed to the faculty of the University of Virginia School of Medicine, Charlottesville, include Dr. Oscar A. Thorup Jr., assistant to the dean and instructor in internal medicine; assistant professors, Drs. Julian R. Beckwith (internal medicine) and Wilford A. H. Councill Jr., (pharmacology); instructors, Drs. Warren Gregory (pediatrics), A. Allen Humphries (anatomy), and Leroy S. Pearce (pathology); and Dr. Francis H. McGovern, Danville, clinical assistant professor of otolaryngology.

Society News.—The Virginia Radiological Society recently elected the following officers: Dr. Lawrence O. Snead, Richmond, president; Dr. W. Allen Barker, Roanoke, vice-president; and Dr. Philip B. Parsons, Norfolk, secretary-treasurer.——The Virginia Orthopedic Society has elected Dr. Bernard D. Packer, Richmond, president, Dr. Allen M. Ferry, Arlington, vice-president, and Dr. William M. Deyerle, Richmond, secretary.——The Virginia Diabetic Association has elected Dr. Robert L. Bailey Jr., Richmond, president, Drs. Thomas S. Edwards, Charlottesville, and William A. Read, Newport News, vice-presidents, and Dr. James F. Conner, Kecoughtan, secretary-treasurer.——At a recent meeting of the Virginia Society of Obstetricians and Gynecologists Dr. Chester L. Riley, Winchester, was installed as president; Dr. Eugene S. Groseclose, Lynchburg, was named president-elect; and Dr. Chester D. Bradley, Newport News, was reelected secretary-treasurer.

WEST VIRGINIA

Society News.—At the annual meeting of the West Virginia Heart Association in Charleston, Nov. 6, 1953, Dr. Walter C. Swann, Huntington, was installed as president; Dr. Francis J. Gaydosh, Wheeling, president-elect; Dr. Richard N. O'Dell, Charleston, vice-president; Dr. William E. Bray Jr., Huntington, secretary; and Mr. Ronald E. Plott, Charleston, treasurer. The next annual meeting will be held in Huntington in November.

Personal.—Dr. Delivan A. MacGregor, Wheeling, has been named chairman of the West Virginia Board of Health for the two year term ending in August 1955.——Dr. Luke W. Frame, Huntington, director of the Huntington-Cabell-Wayne Health Department, has resigned to accept appointment as director of the Giles-Montgomery-Radford Health District in Virginia, where his headquarters are at 601 E. Main St., Christiansburg, Va.

Alumni Honor Gideon Dodds.—A portrait of Gideon S. Dodds, Ph.D., former chairman, committee on admissions and secretary of the faculty of West Virginia University School of Medicine, Morgantown, will be unveiled at 4 p. m., Jan. 15, in the Elizabeth Moore Hall. Dr. Edward J. Van Liere, dean of the school of medicine, will preside, and Dr. Simon B. Chandler, professor of anatomy, will give an appreciation of Dr. Dodds. The portrait will be presented by Dr. G. Ralph Maxwell, president of the Alumni Association of the school of medicine, and accepted by Irvin Stewart, Ph.D., president of the university. The gift was made possible through voluntary contributions by the alumni of the school of medicine.

WISCONSIN

Dr. Boucot to Speak on Cancer.—The University of Wisconsin Medical School, Madison, announces that Alpha Epsilon Iota will present the Katherine Howard Baird memorial lectureship, at 8 p. m., Jan. 13, in the auditorium, Service Memorial Institute. "Survey—Cancer of the Lung" will be given by Dr. Katharine R. Boucot, professor of preventive medicine, Woman's Medical College of Pennsylvania, Philadelphia.

Personal.—Dr. Gerald A. Fostvedt, Barron, was recently elected to the New York Academy of Science. Dr. Fostvedt is associated in medical practice with his wife, Dr. Lucille M. Radke Fostvedt.——Dr. Edwin N. Brown, Arena, was the honored guest of his townspeople at a community reception Oct. 10, 1953. A television set was presented in appreciation of his half century of service.——Dr. Robert T. McCarty, assistant professor of surgery at Marquette University School of Medicine, Milwaukee, recently won the annual award of the Piedmont Proctologic Society for the best research paper in the field of proctology. He presented his paper on cancer research in proctology at the national convention of the American Proctologic Society in Boston.

ALASKA

Hospital News.—At its annual fall meeting in Juneau the Alaska Board of Health approved use of federal funds available on a matching basis for hospital and health center buildings at Cordova, Glenallen, and Homer, the largest of the three being the Cordova project, in which the hospital building is to have 22 beds, as well as a health center. Total cost of this project will be $500,000.

GENERAL

Research Fellowship in Ophthalmology.—Information regarding a research fellowship in ophthalmology at Indiana University Medical Center may be obtained by writing to Dr. Theodore F. Schlaegel Jr., 1100 W. Michigan St., Indianapolis 7. For those who have not had a graduate course in ophthalmology, the fellowship will provide some training prior to a residency. Fellows assist in the eye clinic and at eye surgery and attend the formal classes for eye residents. The stipend is $1,800 per year plus room and laundry.

Psychiatric Endowment Fund.—The American Psychiatric Association has established an endowment fund for the support of projects which will advance mental health. Gifts to the fund will be used to study the nature, causes, treatment, and prevention of mental disorders, to raise standards of treatment and care for the mentally ill in hospitals, to further psychiatric education and research, and to make psychiatric knowledge useful to other branches of medicine, to other sciences, and to the public welfare. Secretary of the association is Dr. Robert F. Gayle Jr., 6300 Three Chopt Road, Richmond 21, Va.

Elisabeth Prentiss Award.—At the annual meeting of the Cleveland Health Museum's National Advisory Council in New York, Clair Elsmere Turner, Dr.P.H., received the 1953 Elisabeth S. Prentiss national award in health education, with a citation that read: "A true professor, master architect of school and adult health education, respected author, worldwide lecturer and consultant." Dr. Turner, assistant to the president of the National Foundation for Infantile Paralysis since 1946, is professor of public health emeritus, Massachusetts Institute of Technology, Cambridge, where he founded the public health department. He was public health consultant with the 1949 Overseas Consultants' Iranian Survey and directed a health education survey of the Arab states. He has been health education consultant with the World Health Organization for four years. He is now president of the Society of Public Health Educators.

Increase in Blindness Among Preschool Children.—The National Society for the Prevention of Blindness reports that blindness among American preschool children increased 47% between 1943 and 1950. The study points out that over 95% of blindness in preschool children takes place before the first birthday. According to Dr. Franklin M. Foote, New York, executive director of the society, most of this increase in blindness among young children is due to the alarming spread of retrolental fibroplasia. Dr. Foote reports that blindness from prenatal influences decreased from 12.9 cases per 100,000 children in 1943 to 8.5 in 1950; infectious diseases from 2 to 1; and injuries from 1.1 to 0.6; but that "retrolental fibroplasia jumped from 1.4 to 10.9." The National Society for the Prevention of Blindness is a nonprofit organization engaged in research, education, and service to conserve vision. It is supported entirely by voluntary contributors.

Society News.—At the annual meeting of the **National Association of State and Territorial Health Officers** Dr. Harold M. Erickson, Portland, Ore., was elected president, Dr. John D. Porterfield III, Columbus, Ohio, vice-president, and Dr. Franklin D. Yoder, Cheyenne, Wyo., secretary-treasurer.——At the annual meeting of the **Congress of Neurological Surgeons** in New Orleans, the following officers were elected: Dr. James R. Gay, White Plains, N. Y., president; Dr. Donald B. Sweeney, Birmingham, Ala., vice-president; and Dr. Bland W. Cannon, Memphis, Tenn., reelected secretary-treasurer.——Drs. Jack Masur and Vane M. Hoge, assistant surgeons general, U. S. Public Health Service, were hosts to the **American Association of Hospital Consultants** when it met in Bethesda, Md., in December to study the extensive facilities of the new clinical center of the National Institutes of Health of the U. S. Public Health Service. Dr. E. Michael Bluestone, New York, president of the association, presided. A symposium, "Radioisotopes in Hospitals," was presented, and papers were read on acoustics in hospitals and modern hospital architecture. The following officers were elected: Dr. G. Harvey Agnew, Toronto, Canada, president; Dr. Jack Masur, Washington, D. C., vice-president; Mr. Jacque Norman, Greenville, S. C., secretary-treasurer; and Drs. E. Michael Bluestone, New York, and Charles F. Wilinsky, Boston, executive members.

New Food and Beverage Sanitation Council.—A nationwide program for better health through food and beverage sanitation was initiated at a meeting Dec. 1-3, 1953, at the offices of the National Sanitation Foundation, Ann Arbor, Mich., under the joint auspices of the National Sanitation Foundation, the National Restaurant Association, and the U. S. Public Health Service. The program undertaken will be the work of a national voluntary committee, the National Industry-Health Council on Food and Beverage Sanitation, which includes Drs. Vlado A. Getting, Boston, and John D. Porterfield III, Columbus, Ohio. The purpose of the new council was announced as "the development and promotion of agreed principles for the protection of health; and the voluntary coordination of the efforts of industry, health agencies and the public in the betterment of food and beverage service and the environmental sanitation conditions surrounding such services in the home, at public and private establishments throughout the community." The program will emphasize the necessity of public awareness as to the benefits of food protection and cleanliness in schools, hospitals and other institutions, and in the home. A series of pilot studies in various communities is being planned to determine the effectiveness of all elements of the program. The results of these tests and studies will be made available to all communities for advancement of local health programs.

Annual Conference on Protein Metabolism.—Serological approaches to studies of protein structure and metabolism will be discussed at the 10th annual Conference on Protein Metabolism at Rutgers University, the State University of New Jersey, New Brunswick, Jan. 29-30. The sessions will begin at 2 p. m. Friday in Van Dyck Hall, where "Proteins as Antigens and Antibodies" will be presented by Dr. Felix Haurowitz, Indiana University, Bloomington, and "The Precipitin Reaction and Studies of Native and Denatured Proteins and Derivatives," by Michael Heidelberger, Ph.D., Columbia University. Dinner, 6 p. m. at University Commons, will precede the evening meeting at which Dr. David Gitlin, Harvard University, Boston, will discuss "Light Scattering and Ultracentrifugation Methods in Studies of Precipitin Systems and Their Application to Human Metabolism," after which "Immunological Analysis of the Biosynthesis of a Protein" will be presented by Melvin Cohn, Institut Pasteur. On Saturday at 10 a. m., J. Munoz of Sharp & Dohme will speak on the use and limitations of serum agar techniques in studies of proteins. At 11 a. m. Alan A. Boyden, Ph.D., Rutgers University, will discuss "Measurement and Significance of Serological Correspondence among Proteins." The registration fee of $3 (payable to Rutgers University) should be sent before Jan. 16 to Prof. William H. Cole, Ph.D., Rutgers University, New Brunswick, N. J.

LATIN AMERICA

Camp Lazear Dedicated.—Camp Lazear, Quemados de Marianao, Cuba, the experimental site associated with Dr. Walter Reed and the U. S. Army Commission in their research on yellow fever, was recently dedicated. The camp is named for Dr. Jesse W. Lazear who died of yellow fever during these experiments. The camp site, located in an isolated area, about one mile from Camp Columbia, which is close to Havana, was abandoned after completion of the experiments, and another location nearer to Camp Columbia was later assumed to be the original site. Dr. Philip S. Hench of the Mayo Clinic, Rochester, Minn., recently discovered the original camp and found there one of the two experimental buildings used by Dr. Reed and the commission. The camp has been reconstructed, and a small park has been established there.

CORRECTIONS

Postgraduate Courses.—In the listing of postgraduate courses published in the Dec. 12, 1953 issue of The Journal, the course given by Columbia University College of Physicians and Surgeons entitled "Hematology, Medicine PM 67-Advanced Hematology" was incorrectly listed as being given at Mt. Sinai Hospital. The course is given at Montefiore Hospital. In the same listing, the course in exfoliative cytology listed under the heading of "Malignant Diseases" gave incorrect dates. This course extends from March 1 to May 28, 1954.

Oral Dose of Quinacrine—Food and Drug Administration.—In The Journal, Nov. 28, 1953, page 1172, in the article entitled "Fatal Aplastic Anemia Following Quinacrine Therapy in Chronic Discoid Lupus Erythematosus," in the first line of the second paragraph, under Report of Case, the dose of quinacrine given orally twice a day should have been 0.1 gm. instead of 1 gm.

In the first footnote at the bottom of this page, the parentheses containing Dr. Sawitsky's name were added by mistake and should have been omitted.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

Alabama: *Examination.* Montgomery, June 22-24, 1954. Sec., Dr. D. G. Gill, 537 Dexter Ave., Montgomery.

Delaware: Dover, Jan. 12-14, 1954. Sec., Dr. Joseph S. McDaniel, 229 South State St., Dover.

Guam: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Director of Medical Services, Guam Memorial Hospital, Agana

Hawaii: Honolulu, Jan. 11-14. *Examination.* Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

Idaho: Boise, Jan. 11-13, 1954. Executive Secretary, Mr. Armand L. Bird, 364 Sonna Bldg., Boise.

Illinois: *Examination and Reciprocity.* Chicago, Jan. 26-28; April 6-8; June 22-24, and Oct. 5-7. Supt. of Registration, Mr. Fredric B. Selcke, Capitol Bldg., Springfield.

Indiana: *Examination.* Indianapolis, June 16-18. Exec. Sec., Miss Ruth V. Kirk, 538 K of P Bldg., Indianapolis.

Maine: *Examination and Reciprocity.* Portland, March 9-10. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

Massachusetts: *Examination.* Boston, Jan. 12-15. Sec., Dr. Robert C. Cochrane, Room 37, State House, Boston 33.

Michigan:* *Examination.* Detroit and Ann Arbor, June 1954. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing 8.

Montana: *Reciprocity.* Helena, April 5. *Examination.* Helena, April 6-7. Sec., Dr. S. A. Cooney, 214 Power Block, Helena.

Nebraska:* *Examination.* Omaha, June 1954. Director, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln.

Nevada:* *Examination and Reciprocity.* Reno, Jan. 6. Sec., Dr. George H. Ross, 112 Curry St., Carson City.

New Hampshire: *Examination and Reciprocity.* Concord, March 10. Sec., Dr. John S. Wheeler, 107 State House, Concord.

New Mexico:* *Examination and Reciprocity.* Santa Fe, April 12-13. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

New York: *Examination.* Albany, Buffalo, Syracuse and New York City, Feb. 16-19. Sec., Dr. Stiles D. Ezell, 23 S. Pearl St., Albany.

North Carolina: *Reciprocity.* Winston-Salem, Jan. 18. Sec., Dr. Joseph J. Combs, 716 Professional Bldg., Raleigh.

Oklahoma:* *Examination.* Oklahoma City, June 9-10. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Pennsylvania: *Examination.* Philadelphia, January 1954. Acting Secretary, Mrs. Margaret G. Steiner, Box 911, Harrisburg.

Rhode Island:* *Examination.* Providence, Jan. 7-8. Admin. of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence

South Carolina: *Reciprocity.* Columbia, Feb. 1. Sec., Mr. N. B. Heyward, 1329 Blanding St., Columbia.

South Dakota:* *Examination.* Sioux Falls, Jan. 19-20, 1954. Reciprocity can be obtained at any time between meetings of board. Executive Secretary, Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

Texas: *Examination and Reciprocity.* Fort Worth, June 21-23. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Ft. Worth 2.

Vermont: *Examination.* Burlington, Feb. 1954. Sec., Dr. F. J. Lawliss, Richford.

Washington:* *Examination.* Seattle, Jan. 10-13. *Reciprocity.* Seattle, Jan. 10. Sec., Mr. Edward C. Dohm, Department of Licenses, Olympia.

West Virginia: *Examination and Reciprocity.* Charleston, Jan. 11-13. Sec., Dr. N. H. Dyer, State Office Bldg., Charleston 5.

Wisconsin:* *Examination and Reciprocity.* Madison, Jan. 12-14, 1954. Sec., Dr. A. G. Koehler, 46 Washington Blvd., Oshkosh.

Wyoming: *Oral Examination and Reciprocity.* Cheyenne, Feb. 1. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska: On application. Juneau or other towns in Territory as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

Connecticut: *Examination.* New Haven, Feb. 13. Address: State Board of Healing Arts, 52 Whitney Ave., New Haven 10.

Iowa: *Examination.* Des Moines, Jan. 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

Michigan: *Examination.* Detroit and Ann Arbor, Feb. 12-13. Sec., Mrs. Anne Baker, 410 W. Allegan St., Lansing 15.

New Mexico: *Examination.* Santa Fe, Jan. 17. Sec., Miss Marguerite K. Cantrell, Box 1522, Santa Fe.

Oklahoma: *Examination.* Oklahoma City, April 16-17. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Oregon: *Examination.* Portland, March 6, June 5, Sept. 11 and Dec. 4. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

Texas: *Examination.* April 1954. Location determined by number of applicants from different sections of the state. Sec., Brother Raphael Wilson, C.S.C., 407 Perry-Brooke Bldg., Austin.

Wisconsin: *Examination.* Madison, April 3 and June 5. Final date for filing application is March 26 and May 28. Sec., Dr. W. H. Barber, 621 Ransom St., Ripon.

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*Basic Science Certificate required.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1954 Annual Meeting, San Francisco, June 21-25.

1954 Clinical Meeting, Miami, Florida, Nov. 30-Dec. 3.

1955 Annual Meeting, Atlantic City, N. J., June 6-10.

1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.

1956 Annual Meeting, Chicago, June 11-15.

Annual Congress on Industrial Health, Brown Hotel, Louisville, Ky., Feb. 24-25. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Congress on Medical Education and Licensure, Palmer House, Chicago, Feb. 7-9. Dr. Edward L. Turner, 535 N. Dearborn St., Chicago 10, Secretary.

National Conference on Rural Health, Baker Hotel, Dallas, Texas, Mar. 4-6. Mrs. Arline Hibbard, 535 N. Dearborn St., Chicago 10, Secretary.

American Academy of Allergy, Shamrock Hotel, Houston, Texas, Feb. 1-3. Dr. Alan G. Cazort, 1425 West 7th St., Little Rock, Ark., Secretary.

American Academy of Forensic Sciences, Drake Hotel, Chicago, Feb. 25-27 Prof. Ralph F. Turner, Michigan State College Dept. of Police Administration, East Lansing, Mich., Secretary.

American Academy of Occupational Medicine, John Marshall Hotel, Richmond, Va., Feb. 11-12. Dr. Leonard J. Goldwater, 600 W. 168th St., New York 32, Secretary.

American Academy of Orthopaedic Surgeons, Palmer House, Chicago, Jan. 23-28. Dr. John R. Norcross, 122 S. Michigan Blvd., Chicago 3, Secretary.

American College of Radiology, Drake Hotel, Chicago, Feb. 5. Mr. William C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

American Federation for Clinical Research:
- Southern Section, Jung Hotel, New Orleans, Jan. 29. Dr. William Parson, University of Virginia School of Medicine, Charlottesville, Va., Chairman.
- Western Section, Auditorium, University of Oregon Medical School, Portland, Ore., Jan. 28. Dr. I. S. Edelman, University of California Medical Center, San Francisco Hospital, San Francisco 15, Secretary.

American Laryngological, Rhinological and Otological Society:
- Middle Section, Park Plaza Hotel, St. Louis, Jan. 18. Dr. French K. Hansel, 634 N. Grand Blvd., St. Louis, Chairman.
- Southern Section, Brown Hotel, Louisville, Ky., Jan. 16. Dr. William C. Wolfe, 1012 Heyburn Bldg., Louisville 2, Ky., Chairman.
- Western Section, University of Oregon Medical School, Portland, Ore., Feb. 6. Dr. Guy L. Boyden, 1735 N Wheeler Ave., Portland 12, Ore., Chairman.

American Orthopsychiatric Association, Hotel New Yorker, New York, Feb. 11-13 Dr. Marion F. Langer, Room, 303 Lexington Ave., New York 16, Secretary.

American Protestant Hospital Association, Palmer House, Chicago, Feb. 10-12. Mr. Albert G. Hahn, Protestant Deaconess Hospital, Evansville, Ind., Executive Secretary.

American Society for Surgery of the Hand, Palmer House, Chicago, Jan. 22. Dr. George V. Webster, 960 East Green St., Pasadena 1, Calif., Secretary.

Central Surgical Association, Statler Hotel, Detroit, Feb. 18-20. Dr. Robert M. Zollinger, University Hospital, Columbus 10, Ohio, Secretary.

Chicago Medical Society Annual Clinical Conference, Palmer House, Chicago, March 2-5. Dr. Maurice M. Hoeltgen, 86 East Randolph St., Chicago, Secretary.

Mid-South Post Graduate Medical Assembly, Hotel Peabody, Memphis, Tenn., Feb. 9-12. Dr. Thurman Crawford, 869 Madison Ave., Memphis, Tenn., Secretary.

National Conference on Trichinosis, A. M. A. Headquarters, Chicago, *March 1. Dr. S. E. Gould, Wayne County General Hospital, Eloise,* Mich., Chairman.

Northwest Society for Clinical Research, Portland, Ore., Jan. 28. Dr. Arthur L. Rogers, 1216 S.W. Yamhill St., Portland, Ore., Secretary.

Regional Meetings, American College of Physicians:

Eastern Pennsylvania, Philadelphia, Jan. 15. Dr. Thomas M. McMillan, 330 S. Ninth St, Philadelphia 7, Governor.

Sectional Meetings, American College of Surgeons:

Charlotte, N. C., Hotel Charlotte, Feb. 1-3. Dr. Thomas D. Sparrow, 403 North Tryon St., Charlotte 2, N. C., Chairman.

Reno, Nev., Riverside Hotel, Feb. 25-26. Dr. Kenneth F. Maclean, 120 N. Virginia St., Reno, Nev., Chairman.

Omaha, Neb., Hotel Fontenelle, March 1-4. Dr. Earl A. Connolly, 107 South 17th St., Omaha, Chairman.

Society of University Surgeons, Sheraton Hotel, Rochester, N. Y., Feb. 11-13. Dr. C. Rollins Hanlon, 1325 South Grand Blvd., St. Louis, Secretary.

Western Society for Clinical Research, Portland, Ore., Jan. 29-30. Dr. Herbert N Hultgren, Stanford Hospital, San Francisco 15, Secretary.

FOREIGN

Association of Surgeons of Great Britain and Ireland, Leeds, England, May 13-15, 1954. Dr. Henry W. S. Wright, 45 Lincoln's Inn Fields, London W.C.2, England, Honorary Secretary.

British Medical Association, Glasgow, Scotland, July 1-9, 1954. Dr. A. Macrae, B.M.A. House, Tavistock Square, London, W.C.1, England, Secretary.

Canadian Medical Association, Vancouver, B. C., Canada, June 14-18, 1954. Dr. T. C. Routley, 244 St. George St., Toronto 5, Ont., Canada, General Secretary.

Conference of International Union Against Tuberculosis, Madrid, Spain, Sept. 26-Oct. 2, 1954. Secretariat, Escuela de Tisiologia, Ciudad Universitaria, Madrid, Spain.

Congress of International Anesthesia Research Society; Los Angeles, Calif., U. S. A, Oct. 4-7, 1954 For information write: Dr. T. H. Seldon, 102-110 Second Avenue S. W., Rochester, Minn., U. S. A.

Congress of International Association for the Prevention of Blindness, New York, N. Y., U. S. A., Sept. 12-17, 1954. Professor Franceschetti, 2 Avenue Mirmot, Geneva, Switzerland, Secretary-General.

Congress of International Society of Surgery, Paris, France, May 21-22, 1954. Dr. L. Dejardin, 141, rue Belliard, Brussels, Belgium, General Secretary.

Health Congress of the Royal Sanitary Institute, Scarborough, England, April 27-30. Mr. P. Arthur Wells, Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W.1, England, Secretary.

International Cancer Congress, Sao Paulo, Brazil, July 23-29, 1954. Prof. A. Prudente, 171 rua Benjamin Constante, Sao Paulo, Brazil, President.

International Conference on Thrombosis and Embolism, Basle, Switzerland, July 15-19, 1954. Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

International Congress on Child Psychiatry, University of Toronto, Toronto, Ontario, Canada, Aug. 13-14, 1954. Miss Helen Speyer, International Association for Child Psychiatry, 1790 Broadway, New York 19, New York, U. S. A., Executive Officer.

International Congress of Clinical Pathology, Washington, D. C., U. S. A., Sept. 6-10, 1954. Dr. Robert A. Moore, Washington University School of Medicine, St. Louis 10, Missouri, U. S. A., Chairman, Committee on Arrangements.

International Congress on Diseases of the Chest, Barcelona, Spain, Oct. 4-8, 1954. Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Illinois, Executive Secretary.

International Congress on Group Psychotherapy, Toronto, Ont., Canada, Aug. 12-14, 1954. Dr. J. L. Moreno, Room 327, 101 Park Ave., New York 17, N. Y., U. S. A., *Director of Organizing Committee.*

International Congress of Hematology, Paris, Sept. 6-11, 1954. Dr. Jean Bernard, 86 rue d'Assas, Paris 6^e, France, Secretary.

International Congress of the History of Medicine, Rome and Salerno, Italy, Sept. 13-20, 1954. For information write: Segreteria XIV Congresso Internazionale di Storia della Medicina, Instituto di Storia della Medicine, Citta Universitaria, Rome, Italy.

International Congress of Hydroclimatism and Thalassotherapy, Dubrovnik, Yugoslavia, May 8-16, 1954. Prof. C. Plavsic, Zeleni venac 1, Belgrade, Yugoslavia, Secretary General.

International Congress of Industrial Medicine, Naples, Italy, Sept. 13-19, 1954. Professor Scipione Caccuri, Director, Institute of Industrial Medicine Policlinico, Naples, Italy, Chairman, Organizing Committee.

International Congress of Internal Medicine, Stockholm, Sweden, Sept. 15-18, 1954. Professor Anders Kristenson, Karolinska Sjukhuset, Stockholm 60, Sweden, Secretary-General.

International Congress of International College of Surgeons, São Paulo, Brazil, April 26-May 2, 1954. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago. Illinois, U. S. A., Secretary-General.

International Congress on Mental Health, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

International Congress of Nutrition, Amsterdam, Netherlands, Sept. 14-18, 1954. For information write: Dr. M. van Eekelen, Centraal Instituut voor Voedingsonderzoek T.N.O., 61 Catharynesingel, Utrecht, Netherlands.

International Congress on Obstetrics and Gynecology, Geneva, Switzerland, July 26-31, 1954. Dr H. de Watteville, Maternité Hôpital Cantonal, Geneva, Switzerland, President.

International Congress of Ophthalmology, University of Montreal and McGill University, Montreal, Canada, Sept. 10-11, 1954, and Waldorf-Astoria, New York, N. Y., U. S. A., Sept. 12-17, 1954. Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minnesota, U. S. A., Secretary-General.

International Congress of Orthopedic Surgery and Traumatology, Berne, Switzerland, Aug. 30-Sept. 3, 1954. For information write: Professor M. Dubois, Isle-Hospital, Berne, Switzerland.

International Congress of Psychology, Montreal, Canada, June 7-12, 1954. For information write: Prof. H. S. Langfeld, International Union of Scientific Psychology, Eno Hall, Princeton University, Princeton, N. J., U. S. A.

International Congress for Psychotherapy, Zurich, Switzerland, July 21-24, 1954. Dr. H. K. Fierz, Theaterstrasse 12, Zurich 1, Switzerland, Secretary General.

International Gerontological Congress, London and Oxford, England, July 12-22, 1954. Prof. R. E. Tunbridge, General Infirmary, Department of Medicine, The University, Leeds, England, President.

International Poliomyelitis Congress, Rome, Italy, Sept. 6-10, 1954. Mr. Stanley E. Henwood, 120 Broadway, New York 5, N. Y., U. S. A., Executive Secretary.

International Society of Blood Transfusion, Paris, France, Sept. 12-19, 1954. For information write: Colonel Julliard, Société Internationale de Transfusion Sanguine, 53 Boulevard Diderot, Paris 12^e, France.

International Society for Cell Biology, Leiden, Netherlands, Sept. 2-9, 1954. Professor Peter J. Gaillard, University of Leiden, Leiden, Netherlands, Secretary.

International Society of Geographical Pathology, Washington, D. C., U. S. A., *Sept. 6-10, 1954. Professor Fred C. Roulet,* Hebelstrasse 24, Basle, Switzerland, Secretary-General.

Journees Medicales, Paris, France, April 21-25, 1954. For information write: Secretariat of the Journees, 12, rue Pierre-Geofroix, Colombes (Seine) France.

Latin American Congress of Otorhinolaryngology, Caracas, Venezuela, Feb. 21-25, 1954. Dr. Victorino Marquez Reveron, Centro, Medico, Caracas, Venezuela, Secretary-General.

Latin American Congress of Physical Medicine, Medellin, Columbia, South America, Feb. 15-20, 1954. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York 21, N. Y., U. S. A., Executive Director.

Pan American Congress of Ophthalmology (Interim), São Paulo, Brazil, June 17-21, 1954. Dr. Moacyr E. Alvaro, São Paulo, Brazil, President.

Pan American Congress of Otorhinolaryngology and Bronchoesophagology, Mexico, D.F., Mexico, Feb. 28-March 4, 1954. Dr. Maximo Garcia Castañeda, Humboldt 17, Mexico 1, D.F., Mexico, Secretary-General.

Pan American Medical Association, International Medical Cruise Congress, S. S. Nieuw Amsterdam, Jan. 6-22, 1954. Dr. Joseph J. Eller, 745 Fifth Avenue, New York 22, N. Y., U. S. A., Executive Director.

Pan-Pacific Surgical Congress, Honolulu, Hawaii, Oct. 7-18, 1954. Dr. F. J. Pinkerton, Suite 7, Young Bldg., Honolulu 13, Hawaii, Director General.

Sectional Meeting, American College of Surgeons, London, England, *May 17-19, 1954. Dr. Michael L. Mason, 40 East Erie St., Chicago 11,* Ill., U. S. A., Secretary.

South American Congress of Angiology, *Sao Paulo, Brazil, July 1954.* For information write: Dr. Rubens Carlos Mayall, Rua Senador Vergueiro 73, Rio de Janeiro, Brazil, S. A.

World Congress of Cardiology, Washington, D. C., and Bethesda, Md., U. S. A., Sept. 12-17, 1954. Dr. L. W. Gorham, 44 East 23d St., New York 10, N. Y., U. S. A., Secretary-General.

World Congress of International Society for the Welfare of Cripples, Scheveningen-The Hague, Netherlands, Sept. 13-17, 1954. Secretariat: Miss H. P. Post, Pieter Lastmarkade 37, Amsterdam Z, Netherlands.

World Federation of Occupational Therapists, Edinburgh, Scotland, *August 17, 1954.*

World Medical Association, Rome, Italy, Sept. 26-Oct. 2, 1954. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary-General.

DEATHS

Tice, Frederick ⊕ Chicago; born near Oshkosh, Wis., July 30, 1871; Rush Medical College, Chicago, 1894; from 1901 to 1905 assistant professor of diseases of the chest and from 1905 to 1918 professor of diseases of the chest at the College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, now known as the University of Illinois College of Medicine, where he was later professor of medicine and head of the department, and clinical professor of medicine emeritus; formerly clinical professor of medicine at his alma mater; an Associate Fellow of the American Medical Association; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians, of which he was formerly vice-president; member of the American Congress on Internal Medicine, Institute of Medicine, Chicago Society of Internal Medicine, Society of Medical History, and the Chicago Tuberculosis Society; for many years attending physician and president of attending staff, Cook County Hospital, where a library has been named in his honor at the Dr. Karl A. Meyer Hall; past president of the board of directors of the City of Chicago Municipal Tuberculosis Sanitarium; served on the attending staff in West Suburban Hospital in Oak Park, Ill., MacNeal Memorial Hospital in Berwyn, Ill., Norwegian American Hospital, Wesley Memorial Hospital, and Mother Cabrini Hospital; editor-in-chief of Tice's "Practice of Medicine"; died in Columbus Hospital, Dec. 18, aged 82, of cardiac decompensation and arteriosclerotic heart disease.

Dunbar, Arthur White ⊕ Rear Admiral, U. S. Navy, retired, Severna Park, Md.; born in Cannon Falls, Minn., Sept. 7, 1869; University of California Medical School, San Francisco, 1891; commissioned an assistant surgeon in the Medical Corps of the U. S. Navy on Oct. 10, 1894; promoted to assistant surgeon on Oct. 10, 1897, to surgeon, March 3, 1903, to medical inspector with the rank of commander Aug. 29, 1916, to medical director with the rank of captain Jan. 1, 1918, and to rear admiral (MC), April 18, 1932, to rank from Dec. 7, 1926; while serving with the U. S. S. San Francisco, participated in the blockade of Havana, Cuba, in the Spanish-American War; as commanding officer of the U. S. S. Relief, made the world cruise with the Great White Fleet; during World War I commanded the hospital ships, U. S. S. Comfort and Repose; during his nearly 39 years of naval service, served in the U. S. Ships Resolute, Newark, Monongahela, Wyoming, California, Tennessee, and Missouri; commanded the Naval hospitals in Philadelphia and Annapolis, Md.; twice served as inspector of East Coast Naval Medical Department activities; assistant chief of the Navy's Bureau of Medicine and Surgery from April, 1925 to June, 1927; placed on the retired list of officers of the Navy on Oct. 1, 1933; fellow of the American College of Surgeons and the American College of Physicians; died in the Naval Hospital, Philadelphia, Nov. 6, aged 84, of bronchopneumonia.

Shank, Reed Albert ⊕ Cincinnati; born in Rawson, Ohio, March 6, 1893; University of Cincinnati College of Medicine, 1916; served during World War I; chairman of the athletic committee of the board of directors of the University of Cincinnati; formerly team physician for the Cincinnati Reds Baseball Club; affiliated with Good Samaritan, Children's, and Christ hospitals; the University of Cincinnati announced that the contemplated upper deck enlargement of the University of Cincinnati's James Gable Nippert Stadium will be known as the Reed A. Shank Pavilion in tribute to him; died suddenly Nov. 26, aged 60, of coronary disease, while watching the annual Cincinnati-Miami (Ohio) University football game.

Guy, William Harvey ⊕ Pittsburgh; born in Holt, Pa., March 24, 1887; University of Pittsburgh School of Medicine, 1910; professor emeritus of dermatology at his alma mater; specialist certified by the American Board of Dermatology and Syphilology; member of the American Dermatological Association, of which he was formerly director and president, and the American Academy of Dermatology and Syphilology; past president of the Allegheny County Medical Society and the Pittsburgh Dermatological Society; served during World War I; member of the staffs of Braddock (Pa.) Hospital, South Side, Allegheny General, Presbyterian, Woman's Eye and Ear, and Elizabeth Steel Magee hospitals; died Nov. 13, aged 66, of metastatic carcinoma of the liver.

Calhoun, Orange Van ⊕ Lincoln, Neb.; born in Birmingham, Iowa, Feb. 6, 1901; Western Reserve University School of Medicine, Cleveland, 1932; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; president of the Lancaster County Medical Society; president of the Lancaster Tuberculosis Association; past president of the Lincoln-Lancaster Health Department; formerly member of the school board; served during World War II; affiliated with Veterans Administration Hospital and the Lincoln General Hospital, where he died Nov. 2, aged 52, of coronary occlusion.

Delehanty, Edward ⊕ Denver; born in 1867; Colorado School of Medicine, Boulder, 1895; member of the American Psychiatric Association and the Central Neuropsychiatric Association; member of the House of Delegates of the American Medical Association in 1932; past president of the Colorado State Medical Society and Denver City and County Medical Society; professor emeritus of neurology at his alma mater, now known as University of Colorado School of Medicine; affiliated with Colorado General, Mercy, and National Jewish hospitals and St. Joseph's Hospital, where he died Nov. 4, aged 85, of coronary thrombosis.

Baker, James Adolph, Gaston, Ore.; Denver College of Medicine, 1891; for many years mayor; formerly practiced in Florence, Colo., where he was coroner of Fremont County; died in the Good Samaritan Hospital in Portland Nov. 7, aged 87, of myocardial infarction and diabetes mellitus.

Bouvier, John Joseph ⊕ Whitinsville, Mass.; Georgetown University School of Medicine, Washington, D. C., 1932; on the staff of the Whitinsville Hospital; for many years chairman of the school board; died in Phillips House, Massachusetts General Hospital, Boston, Nov. 13, aged 47.

Brown, Chester T., New Brunswick, N. J.; Johns Hopkins University School of Medicine, Baltimore, 1907; past president of the Association of Life Insurance Medical Directors of America; member of the Industrial Medical Association; retired in 1947 as medical director for the Prudential Insurance Company in Newark; past president of the Highland Park Library Board; died in Dufur Hospital in Ambler, Pa., Nov. 11, aged 71, of a cerebral vascular accident.

Campbell, Frank Dillon ⊕ Coal Grove, Ohio; Miami Medical College, Cincinnati, 1894; died in Athens Nov. 6, aged 86, of agranulocytic angina.

Carlisle, George Lawson ⊕ Dallas, Texas; Southern Methodist University Medical Department, Dallas, 1914; served on the faculty of Baylor University College of Medicine and Southwestern Medical School of the University of Texas; past president of the Dallas County Medical Society; died Nov. 2, aged 62, of coronary occlusion.

Cheney, William Henry, Signal Mountain, Tenn.; University of Chattanooga Medical Department, 1909; manager, secretary, and treasurer of the Natural Gas Service Company; once a member of the state game and fish commission; for many years chairman of the county board of health, and county physician; died in the Memorial Hospital Nov. 3, aged 81, of coronary occlusion.

⊕ Indicates Member of the American Medical Association.

Cloyd, Augustus David ⊕ Omaha; University of Nebraska College of Medicine, Omaha, 1926; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; associate in internal medicine at his alma mater; died Nov. 9, aged 55.

Cooke, Thomas Sanford, Portsmouth, Va.; University of Virginia Department of Medicine, Charlottesville, 1905; affiliated with King's Daughters' Hospital and the Maryview Hospital; died Nov. 15, aged 72, of coronary occlusion.

Cooley, James Allen ⊕ Brooklyn; Cornell University Medical College, New York, 1908; affiliated with Swedish Hospital, where he died Nov. 9, aged 68, of coronary thrombosis.

Crawford, James Harry ⊕ Watertown, S. D.; Rush Medical College, Chicago, 1901; served during World War I; died Sept. 13, aged 76, of coronary occlusion.

Cutchin, Ashley P., ⊕ Franklin, Va.; Medical College of Virginia, Richmond, 1897; died Nov. 7, aged 79, of cerebral hemorrhage.

Dembrow, William Louis ⊕ Silver Spring, Md.; Medical College of Virginia, Richmond, 1918; served during World Wars I and II; affiliated with the Veterans Administration; died Nov. 1, aged 64, of congestive heart failure.

Dotson, Donald Clark ⊕ Owingsville, Ky.; University of Louisville School of Medicine, 1932; died in the Good Samaritan Hospital, Lexington, recently, aged 48, of cardiovascular disease and malignant hypertension.

Frutig, Harold Carl, North Bergen, N. J.; University and Bellevue Hospital Medical College, New York, 1938; affiliated with North Hudson Hospital in Weehawken, and Christ Hospital in Jersey City; died Nov. 16, aged 39, of chronic myocarditis and thrombophlebitis.

Gibson, Thomas Archer ⊕ Winchester, Va.; University of Pennsylvania School of Medicine, Philadelphia, 1928; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; served during World War II; president of the staff of the Winchester Memorial Hospital, where he died Nov. 2, aged 53, of coronary disease.

Hodgson, Philip Morton ⊕ Bay Minette, Ala.; Atlanta Medical College, 1889; for many years a member of the state legislature; served as county health officer; died Nov. 5, aged 88, of nephritis.

Holabach, Philip Jacob ⊕ Palouse, Wash.; University of Cincinnati College of Medicine, 1936; member of the American Academy of General Practice; served as county health officer; died in the Memorial Hospital, Pullman, Nov. 10, aged 44.

Hubert, Gilbert Richard ⊕ Torrington, Conn.; Yale University School of Medicine, New Haven, 1935; certified by the National Board of Medical Examiners; fire department physician; served during World War II; died in the Grace-New Haven Hospital in New Haven, Oct. 28, aged 46.

Johnson, Earl Emerson ⊕ Covington, Ind.; Kansas City (Mo.) Hahnemann Medical College, 1911; died Nov. 4, aged 68, of heart failure.

Leibow, Louis Manual ⊕ New York City; New York Homeopathic Medical College and Flower Hospital, New York, 1926; affiliated with Beth David and St. Elizabeth's hospitals; died Nov. 25, aged 53, of coronary thrombosis.

Lesemann, Frederick Joseph ⊕ Los Angeles; Rush Medical College, Chicago, 1908; member of the Illinois State Medical Society; formerly practiced in Chicago, where he was for many years a member of the board of trustees and member of the senior surgical staff of the Englewood Hospital; died Nov. 25, aged 73, of coronary arteriosclerosis.

Loeb, Victor Alexander ⊕ Philadelphia; University of Pennsylvania Department of Medicine, Philadelphia, 1899; for many years inspector for the city board of health; died in the Lankenau Hospital Nov. 12, aged 76.

Lowe, Orrin C. ⊕ Paola, Kan.; University Medical College of Kansas City, Mo., 1912; past president of the Miami County Medical Society; died Nov. 3, aged 70, of cirrhosis of the liver.

Lowthian, Elvin Lorne, Yorkville, Ohio; Western Reserve University Medical Department, Cleveland, 1908; died Nov. 1, aged 74, of cerebral hemorrhage.

Lundgren, Albert Conrad ⊕ Minneapolis; Marquette University School of Medicine, Milwaukee, 1913; member of the American Academy of General Practice; died in Las Vegas, Nev., Sept. 26, aged 62, of acute myocardial infarction.

MacAdam, Edward Wallace, New York City; New York Homeopathic Medical College and Hospital, New York, 1907; on the faculty of New York Medical College, Flower and Fifth Avenue Hospitals, where he was assistant attending physician; served as treasurer of the American Institute of Homeopathy; editor of the *Journal of the American Institute of Homeopathy,* from 1946 to 1948; died Nov. 16, aged 79, of pneumonia.

McClanahan, Benjamin Vaughn ⊕ Galesburg, Ill.; University of Illinois College of Medicine, Chicago, 1915; served during World War I; affiliated with Galesburg Cottage and St. Mary's hospitals; died in Beardstown Nov. 17, aged 61, of cerebral hemorrhage.

McClure, Gus Rock, Harrisburg, Ark.; American Medical University, Kansas City, Mo., 1928; died in the Baptist Hospital, Memphis, Tenn., Nov. 8, aged 49.

McKay, James George ⊕ Washington, D. C.; University of Pennsylvania Department of Medicine, Philadelphia, 1895; served in the Spanish-American War, the Boxer Rebellion, the Philippine Insurrection, and World War I; affiliated with Doctors Hospital and Central Dispensary and Emergency Hospital; died in Mount Vernon Hospital Nov. 15, aged 81, of carcinoma of the larynx.

McKinney, Madison John, Sacramento, Calif.; University of Southern California School of Medicine, Los Angeles, 1950; interned at San Francisco Hospital, where he served a residency; served a residency at Stanford University Hospitals in San Francisco, Community Hospital of San Mateo County in San Mateo, and Santa Clara County Hospital in San Jose; died Nov. 20, aged 36, of poliomyelitis.

McLaughlin, Calvin Sturgis, Charlotte, N. C.; University of Maryland School of Medicine, Baltimore, 1896; past president of the Mecklenburg County Medical Society; formerly on the faculty of North Carolina Medical College; affiliated with Presbyterian Hospital and Mercy Hospital, where he died Nov. 15, aged 83, of acute myocardial failure.

Martinson, Stella Cleary, Graysville, Tenn.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1900; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; died Sept. 24, aged 84, of carcinoma of the bladder.

Maynard, Oswald S., ⊕ Nashua, N. H.; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, Canada, 1900; served as mayor and chairman of the board of health; affiliated with St. Joseph's Hospital and the Nashua Memorial Hospital; died Nov. 18, aged 79, of cerebral hemorrhage and hypertension.

Pitney, Orville, Redwood City, Calif.; Missouri Medical College, St. Louis, 1899; also a registered pharmacist; at one time practiced in Cheraw, Colo., where he was councilman, mayor, and member of the board of education; served on the staff of the Mennonite Hospital in La Junta, Colo.; died in Sequoia Hospital Nov. 2, aged 78, as the result of injuries received when he missed the lower step of a commuter train coach and fell between the cars.

Preston, Robert Sheffey ⊕ Richmond, Va.; Johns Hopkins University School of Medicine, Baltimore, 1908; associate professor of clinical medicine at the Medical College of Virginia; died Oct. 28, aged 68, of a heart attack.

Pugmire, Charles Coulson Rich ⊕ Salt Lake City, Utah; Medico-Chirurgical College of Philadelphia, 1910; member of the Pacific Coast Oto-Ophthalmological Society; died Nov. 20, aged 73.

Reasonover, Farley Straughn, Dallas, Texas; Southwestern Medical School of the University of Texas, Dallas, 1952; interned at the Baylor University Hospital; died Oct. 25, aged 27.

Robertson, John Banks ⊕ Minneapolis, Minn.; Rush Medical College, Chicago, 1892; served during World War I; for many years practiced in Cottonwood, where he was county coroner, mayor, councilman, and member of the board of education; died Sept 19, aged 86, of carcinoma of the prostate with metastases.

Robison, Benjamin Franklin ⊕ Salt Lake City; University of Pennsylvania School of Medicine, Philadelphia, 1934; served during World War II; affiliated with St. Mark's Hospital, where he died Nov. 19, aged 44.

Roe, Cullen Bryant ⊕ Afton, Iowa; Drake University College of Medicine, Des Moines, 1912; past president of the Union County Medical Society; past president of the school board; died in the Greater Community Hospital in Creston, Oct. 30, aged 65, of acute myelogenous leukemia.

Rubin, Israel Bernard ⊕ Charlton, N. Y.; Tufts College Medical School, Boston, 1928; affiliated with Saratoga Hospital in Saratoga Springs, where he died Oct. 1, aged 47.

Russell, James Clinton ⊕ Chandlerville, Ill.; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1905; University of Nashville Medical Department, 1908; died in Schmitt Memorial Hospital, Beardstown, Nov. 7, aged 71, of injuries received in an automobile accident.

Rutter, Clinton E., Northumberland, Pa.; Medico-Chirurgical College of Philadelphia, 1903; president of the board of health; affiliated with Sunbury (Pa.) Community Hospital, where he died Sept. 8, aged 74, of coronary thrombosis.

Saunders, Jones Lindsey ⊕ Newport, Ind.; Rush Medical College, Chicago, 1904; served with the American Expeditionary Forces in France during World War I; on the staff of the Vermilion County Hospital in Clinton, where he died Nov. 12, aged 72, of coronary occlusion.

Scales, Willis West ⊕ Mobile, Ala.; Medical College of Alabama, Mobile, 1896; secretary of the Mobile County Medical Society; served as secretary of the Mobile County Board of Health and as administrative assistant to the county health officer; died Nov. 17, aged 77, of arteriosclerosis, hypertension, and coronary occlusion.

Scharnagel, Isabel Mona ⊕ New York City; Rush Medical College, Chicago, 1931; fellow of the American College of Surgeons; member of the American Radium Society; American Medical Women's Association, of which she was formerly secretary; affiliated with New York Infirmary and the Memorial Hospital, where she died Nov. 24, aged 47, of nephrosis.

Schoenholtz, George ⊕ New York City; Medical College of Virginia, Richmond, 1924; affiliated with Bronx, Lebanon, and Fordham hospitals; died Sept. 26, aged 55, of coronary thrombosis.

Schultz, Robert Richie ⊕ Scranton, Pa.; Jefferson Medical College of Philadelphia, 1925; served during World War I; formerly director of the department of public health; affiliated with Hahnemann, State, West Side, and Mercy hospitals; died Nov. 14, aged 54, of a heart attack.

Shannon, Joseph Barnet, Oklahoma City, Okla.; Physio-Medical College of Indiana, 1902; died Nov. 13, aged 74, of myocardial infarction and coronary arteriosclerosis.

Sievers, Claudius L., Denison, Iowa; Sioux City College of Medicine, Sioux City, 1904; died in Omaha, Nov. 3, aged 76.

Skinner, Henry Harlow ⊕ Yakima, Wash.; Western Reserve University Medical Department, Cleveland, 1908; fellow of the American College of Surgeons; served during World War I; served as president and secretary-treasurer of the Washington State Obstetrical Association; on the staff of St. Elizabeth's Hospital; died Nov. 17, aged 75.

Stampa, Samuel ⊕ Atlanta, Ga.; Emory University School of Medicine, 1916; affiliated with Georgia Baptist, St. Joseph, and Crawford W. Long Memorial hospitals; died Nov. 4, aged 67, following an operation on the prostate.

Stockard, Thomas James ⊕ Lawrenceburg, Tenn.; University of Nashville Medical Department, 1910; died in Decatur, Ala., Oct. 4, aged 72.

Stoner, David Clinton ⊕ Mount Joy, Pa.; Baltimore University School of Medicine, 1899; died Nov. 5, aged 76, of cerebral hemorrhage.

Taylor, Louise Hertig, Princeton, N. J.; Woman's Medical College of Pennsylvania, Philadelphia, 1890; died Oct. 22, aged 89.

Thames, Rufus ⊕ Milton, Fla.; Atlanta College of Physicians and Surgeons, 1906; died in Santa Rosa Hospital Oct. 26, aged 78, of cerebral thrombosis.

Tornabene, Vincent, Chicago; Chicago College of Medicine and Surgery, 1909; died Nov. 29, aged 78, of gastric hemorrhage and gastric ulcer.

Townsend, Eugene Herbert ⊕ La Crosse, Wis.; Rush Medical College, Chicago, 1917; died Oct. 23, aged 62, of Parkinson's disease.

Waiss, Alexander Sandor, Lagunitas, Calif.; Medical Department of Tulane University of Louisiana, New Orleans, 1892; died Nov. 8, aged 87.

Walton, George Britain ⊕ Chadbourn, N. C.; Tulane University of Louisiana School of Medicine, New Orleans, 1930; died in the James Walker Memorial Hospital, Wilmington, Nov. 14, aged 50.

Weaver, Don Dickinson ⊕ Oakland, Calif.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1911; fellow of the American College of Surgeons; on the staffs of the Providence, Peralta, and East Oakland hospitals; died Nov. 9, aged 63.

Wren, Alphonse A., New York City; University and Bellevue Hospital Medical College, New York, 1903; member of the American Urological Association; affiliated with Fordham Hospital; died in St. Elizabeth's Hospital Nov. 23, aged 76, of cerebral thrombosis.

GOVERNMENT SERVICES

AIR FORCE

Chilean Award to Surgeon General.—Ambassador Anibal Jara of Chile, as seen in the illustration, recently presented the Military Medal of Chile to Major Gen. Harry G. Armstrong, Surgeon General, U. S. A. F., at a ceremony at the Chilean embassy, Washington, D. C. The gold medal was awarded to General Armstrong for his "valuable services to the Chilean Air Force and to all humanity" as the author of "Principles and Practice of Aviation Medicine" and for his assistance in providing training to Chilean students at the U. S. A. F. School of Aviation Medicine. Also attending the ceremony was Gen. Raul Yazigi, Surgeon General, Chilean Air Force, who is visiting Washington.

PUBLIC HEALTH SERVICE

Advanced Courses in Sanitation.—Ten advanced sanitation training courses have been scheduled for the period January to June, 1954, at the Environmental Health Center of the Public Health Service, in Cincinnati. The courses include bacteriological examination of water and dairy products, food sanitation, water pollution abatement, and the membrane filter in bacteriological analysis of water. They are designed for professional personnel from state and local health departments, water pollution control agencies, and governmental units. Letters of application for training should be sent to Officer in Charge, Environmental Health Center, Cincinnati.

The courses are scheduled as follows:

Jan. 11-15, Advanced training in bacteriological examination of water

Jan. 18-22, Advanced training in bacteriological examination of milk and dairy products

Jan. 25-29, Food sanitation training

Feb. 16-19, Short course in phenol determination (intensive laboratory practice in determination of phenols in industrial wastes and polluted waters)

March 8-19, Advanced training for sanitary engineers in water pollution abatement programs

April 7-9, Bioassay of industrial wastes

May 3-7, Membrane filter in bacteriological analysis of water

May 19-21, Short course in the analysis of metals in industrial wastes

June 8-11, Advanced training for aquatic biologists in water pollution control

To be announced, Emergency sanitation training

Appointments to National Councils.—The Surgeon General has announced the appointment of Dr. Gail M. Dack, director of the food research institute, University of Chicago, as a member of the National Advisory Health Council, and of Mr. Elmer H. Bobst, New York, president of William R. Warner and Company, Inc., and of Richard Hudnut, Inc., as a member of the National Advisory Cancer Council. Dr. Dack served with the office of scientific research and development and as medical consultant to the Army during World War II, and since 1951 he has been vice-chairman of the National Research Council's commission on foods. Mr. Bobst, who became a registered pharmacist in 1905, has been associated with several prominent drug firms, and in 1945 he was made president of Hudnut-Warner and all their subsidiaries. He is a trustee of Rutgers University and has served as vice-chairman of the board of the American Cancer Society and since 1947 as chairman of the national campaign committee.

The appointment of John Hay Whitney, New York financier, to the National Advisory Health Council, has been announced by Surgeon General Scheele. A colonel in the Air Force during World War II, Mr. Whitney has since served as special adviser and consultant on public affairs for the Department of State and as a member-at-large of the U. S. National Commission of the United Nations Educational, Scientific, and Cultural Organization. He is president of New York Hospital, chairman of the board of the Museum of Modern Art, and member of the board of trustees of the National Planning Association. Mr. Whitney obtained his bachelor's degree from Yale University in 1926, then studied at Oxford University in England for a year.

Personal.—The Surgeon General, on Nov. 25, announced the appointment of Frank A. Robbins Jr., of Harrisburg, Pa., to the National Advisory Arthritis and Metabolic Diseases Council. Mr. Robbins retired in 1946 as general manager of the Steelton Plant of the Bethlehem Steel Corporation. He is a graduate of the Massachusetts Institute of Technology, and for several years he was secretary of the department of public assistance of the state of Pennsylvania.—Among five new members of the National Advisory Heart Council of the Public Health Service appointed by the Surgeon General are E. Cowles Andrus, M.D., Baltimore, and Owen H. Wangensteen, M.D., Minneapolis. Dr. Andrus is president-elect of the American Heart Association. Dr. Wangensteen is chief of the department of surgery at the University Hospital, Minneapolis.

VETERANS ADMINISTRATION

Hospital News.—Dr. Richard L. Frank, professor of clinical psychiatry, State University of New York Medical College at New York, addressed the hospital staff of the VA Hospital, Northport, L. I., N. Y., Nov. 12, on "An Approach to the Problems of Diagnosis."——William A. Hunt, Ph.D., Chairman of the Department of Psychology at Northwestern University, Chicago, lectured at the VA Hospital at Downey, Ill., Dec. 2, on "The Nature and Function of Diagnosis," and "An Experimental Approach to the Diagnostic Process."——Dr. Lothar B. Kalinowsky, New York, addressed the staff of the Veterans Administration Hospital, Northport, N. Y., Oct. 27 on indications for shock treatments and psychosurgery. Dr. Albert F. R. Andresen, New York, Oct. 29, addressed the staff on current physiological aspects of gallbladder disease. On Oct. 20, Dr. Emil A. Gutheil, president, Association for the Advancement of Psychotherapy, gave the address, "Psychotherapy in Latent Schizophrenia," before the Long Island Psychiatric Society, also at the Northport VA Hospital.——Dr. J. L. Moreno, physician-in-charge, Moreno Sanitarium, Beacon, N. Y., discussed group psychotherapy at a seminar held at the VA Hospital, Downey, Ill., Dec. 14, 1953.

Appoint Chief of Rehabilitation Service.—Dr. Louis B. Newman has been appointed chief of the physical medicine and rehabilitation service at the new 520-bed Veterans Administration Research Hospital, 333 E. Huron St., Chicago. Prior to this appointment Dr. Newman had been chief of physical medicine and rehabilitation at the Veterans Administration Hospital, Hines, Ill., since March, 1946.

FOREIGN LETTERS

COLOMBIA

Radical Surgery of Neck.—The Second National Meeting of Surgeons was held in Medellin in April. Drs. J. A. Jácome Valderrama, B. Moreno Mejía, and J. M. Huertas de Francisco read a statistical study on indications and results of radical surgery of the neck as they have been observed during the last 10 years at the National Institute of Cancerology (the old National Institute of Radium). It is difficult to evaluate the results obtained from the operation because many of the patients fail to report for follow-up observation. Radical operations have been performed on the neck in the institute since shortly after it opened Aug. 20, 1935. From 1935 to 1940, there were 25 such patients; from 1943 to 1950, 52 patients; and in 1951 and 1952, 26 patients. Thus there was an increase of from 5 to 13 patients per year. The tumors for which such operations are considered indicated were located as follows: tongue (28.2%), the skin of the face and of the neck (14.1%), lips (12.8%), tonsils (9%), thyroid (6.41%), and others 29.5%. The incidence of cancer of the thyroid is greater than these figures show, because many of the patients who have cancer of the thyroid are operated on by a general surgeon and do not come to the institute. Cancer of the tongue, skin, and lips is also more frequent than the statistics show, because a large number of patients with cancer of these structures have only roentgen therapy with a large percentage of cures. Radical operation is not necessary for these patients if roentgen therapy is given before the occurrence of metastases. Malignant melanoma constitutes the exception to this rule, as it always calls for radical operation as early as possible. The frequency of malignant melanoma is shown by the fact that 10 of the patients operated on in the last 10 years had this type of lesion. The authors obtained good results in 62.8% of the cases, with control for one to five years, recurrences in 25.7%, late metastases in 3.8%, immediate or operative death in 5.1%, and good results in benign tumors in 2.57%.

Postgraduate Course.—The Unidia Medical Association with headquarters in Bogotá conducted a postgraduate course from Oct. 19 to 24, 1953. Sixty physicians attended the course, which consisted of lectures and practical demonstrations by Dr. H. H. Turner, professor of medicine of the University of Oklahoma and secretary of the Endocrine Society, Dr. Lawson Wilkins, pediatrist of the Johns Hopkins Hospital, Baltimore, and vice-president of the Endocrine Society, and Dr. Ernest Salgado, supervisor of work on the concepts of Prof. Hans Selye of Montreal University. Professor Turner dealt with hypogonadism in men and women, the diagnosis and treatment of hyperthyroidism (three years of experience with radioactive iodide), endocrine disorders in children and psychosomatic aspects of pseudoendocrinopathies. Professor Wilkins discussed constitutional variations in development, hypothyroidism in children, endocrine and extraendocrine factors retarding growth, sexual precocity, infantilism, and the diagnosis and treatment of the adrenogenital syndrome. Dr. Salgado spoke on the general adaptation syndrome, suprarenal insufficiency, the clinical use of cortisone and corticotropin, and arterial hypertension. Equipment for simultaneous translation of the lectures from English into Spanish was used.

Personal.—Dr. Orlando Cañizares, dermatologist of the Bellevue Hospital of New York and associate professor of dermatology of the school of medicine of the New York University, came to Colombia on invitation from the Colombian medical profession. He visited the hospitals of Bogotá and gave some lectures on his specialty.

FRANCE

New Method of Triboelectricity.—Triboelectricity (frictional electricity), the first form of electricity used in electrotherapy, has been produced by static machines. Professor Darmois reported on April 8 to the Academy of Sciences that this same triboelectricity may be obtained from polyvinyl chloride fibers submitted to a slight friction. This negatively charged static electricity produces an electric field of a size only limited by the formation of the spark; in the air it corresponds to a value of nearly 30,000 volts per centimeter of height.

Dr. Marc Iselin, chief surgeon of the Nanterre Hospital and a member of the National Academy of Surgery, thought that triboelectricity could be used in therapeutics by the simple application of bandages or underclothes made of polyvinyl chloride fibers without the use of any generator. For a year and a half F. Deniker has been using this method at the Nanterre Hospital on 75 patients by general or local applications. Seven of 10 patients with cervicobrachial neuralgia obtained complete relief after treatments of various duration. Eight of 18 patients with luxations, fractures, sprains, and trophic disorders were rapidly cured and 8 others much improved. It is in these patients that the analgesic effect of such bandages is of great value. In five of seven patients with lumbar neuralgia, rapid relief of pain was noted; another was improved; and the treatment failed in the remaining one. Five patients with intercostal neuralgia were definitely cured after a brief treatment. Four patients with sciatic neuralgia were much improved. Five of 10 patients with degenerative articular rheumatism and 2 of 4 patients with coxitis were improved. Their pain subsided progressively, and the abduction angle of the lower limbs was improved by 20 degrees. Patients with herpes zoster, gonalgia, torticollis, and pulmonary tuberculosis also obtained relief from pain. All but four of these patients were treated with triboelectricity alone. Follow-up studies included functional signs, radiological and biological examinations, examination of the limitation of movements, and dynamometry. There is apparently no contraindication to the use of this treatment, and all patients agree to a general feeling of well-being and to a diminution of asthenia. In his report of July 3 to the Medical Society of the Paris Hospitals, Deniker stressed, among other things, that the therapeutic efficacy of polyvinyl chloride was checked in 10 patients, during the course of the treatment, by substituting underclothing of regenerated cellulose. This was followed by a reappearance of pain and functional impairment in eight patients, and the other two reported continued alleviation of pain. The mode of action is not understood.

New Sulfone in Leprosy and Tuberculosis.—Tzanck, Basset, and Salomon, having used a new sulfone (Di-atox argentique) in the treatment of leprosy for about 43 months, presented the first three patients treated without interruption by this drug at the meeting of the Medical Society of the Paris Hospitals on June 26. The daily dose was three tablets of 50 mg. each for a 13-year-old child at the beginning of the treatment and four such tablets for adults with lepromatous forms, which was associated in one case with severe nervous impairment. All of the patients had leonine facies. After a clinical recovery, in two patients after 19 months of treatment and in the third after 24 months, the dose was decreased to 100 mg. and later to 50 mg. The three patients have returned to a normal life in the community. During the course of treatment no relapse occurred. Repeated hematological examinations revealed no alteration of the hematological constants. The authors stressed the perfect toleration of the sulfone by the organism, the preservation of the high degree of efficacy, and the absence of acquired tolerance by the bacteria.

Tzanck and his associates have also used this sulfone in treating the various forms of cutaneous tuberculosis with promising results. The investigations of Gernez-Rieux and his associates with tuberculostatic drugs have already shown that

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The items in these letters are contributed by regular correspondents in the various foreign countries.

the most rapid and definite action is obtained with a combination of isoniazid and sulfone. For some time, Benda has been treating his patients, first by an initial treatment with streptomycin, isoniazid, *p*-aminosalicylic acid, and the sulfone, followed by a maintenance treatment with isoniazid and sulfone. He confirmed the remarkable tolerance for this sulfone, as well as its absolute innocuousness, in contrast with the earlier sulfones, which were detrimental to the blood. He thinks that it is too early to estimate the absolute therapeutic value of this sulfone in tuberculosis, as he always uses it in association with other antibiotics.

ISRAEL

Prof. E. Wertheimer Elected Dean.—Dr. E. Wertheimer, professor of biochemistry in the faculty of medicine of the Hebrew University, has been elected dean of the faculty for the two year term 1953-1955, succeeding Prof. A. Dostrovsky. Professor Wertheimer was born in Germany and held a professorship of physiology at the University of Halle from 1927 to 1933, when he settled in Israel. Since then he has served in his present post of professor at the university and as head of Hadassah's department of clinical chemistry.

The problem of permeability of the living cells and membranes attracted Wertheimer's interest during the first years of his scientific activity in Halle. His work on the frog skin and yeast cells contributed to the definition of the peculiarities of biological membranes and stressed the importance of metabolic activities occurring in the cell membrane. This work was continued after his arrival in Israel and led to the additional finding that the sugar assimilated by yeast cells is transformed into a stable alkaline derivative. In his work on the absorption of sugars by the intestine, he succeeded in differentiating the active and the passive processes by means of phlorhizin poisoning. He demonstrated for the first time the phosphorylation of sugars by living yeast.

In another series of papers he established the concept that adipose tissue is an active tissue with special metabolic functions and not an inert site of fat storage, as was generally assumed. He was the first to present experimental evidence for the dependence of fat mobilization and deposition on the innervation of the tissue. His work on the deposition of glycogen in adipose tissue was started in Halle and continued in Jerusalem, and he established the conditions for its deposition and dependence on endocrine and nutritional factors. The fact that glycogen deposition always preceded fat deposition led him to the hypothesis that adipose tissue is capable of synthesizing part of its fat and that this synthesis is connected with glycogen deposition. With his pupils he was later able to prove this point by measuring the respiratory quotient of glycogen-containing tissue and by experiments with deuterium and with radio active acetate. Special issues of *Acta Medica Orientalia* and *Harefua* commemorated Professor Wertheimer's 60th birthday. They contain medical scientific contributions of his pupils and friends.

Synthetic Activity of Adipose Tissue.—In *Acta Medica Orientalia* (12:187, 1953), G. Rose, I. Stern, and B. Shapiro report on the synthetic activity of adipose tissue. As far back as 1926 Wertheimer provided experimental proof that fat mobolization from adipose tissue depended on innervation and that the increased mobilization of fat to the liver, occurring in the pancreatic and phlorhizin diabetes, could be prevented by insulin (humoral factors on the activity of adipose tissue). Recently it was shown that an active metabolic process is involved in the uptake of fatty acids by adipose tissue from the medium in vitro.

The presence of glycogen could not be demonstrated in the adipose tissue of normally fed animals. If, however, a period of fasting or undernutrition was followed by a diet rich in carbohydrate, glycogen could be found regularly. On continuation of the carbohydrate feeding, the glycogen disappeared. Glycogen was also found inside the cells, but not in the intercellular spaces, showing that, most likely, glycogen was synthesized within the cells and not deposited after reaching the tissue in the blood stream. Glycogen deposition precedes deposition of fat and terminates when the latter is completed. It was therefore suggested by Wertheimer that glycogen deposition in adipose tissue precedes fat deposition. Direct evidence for the assumption that adipose tissue is capable of fat synthesis was furnished by in vitro experiments involving the incubation of adipose tissue in a medium enriched with heavy water. Deuterium was found to be incorporated into the fatty acids and the incorporation was increased in tissues from rats kept on a diet accelerating glycogen deposition and fat synthesis. In order to obtain final proof and to get some information on the precursors of fat synthesis in adipose tissue, C^{14}-labeled glucose and C^{14}OOH-acetate were incubated in vitro with adipose tissue. The authors found that uniformly labeled C^{14}-glucose as well as C^{14}-OOH-labeled acetate were converted into long chain fatty acids on incubation with adipose tissue in vitro. No significant C^{14}-carbon was found in the cholesterol fraction of adipose tissue, and the C^{14} in the synthesized fatty acids was not confined to the terminal carbons, suggesting a complete new synthesis of fatty acid molecules rather than the addition of a two-carbon fragment to an existing fatty acid chain.

Fluorogenic Substances in Urine and Adrenal Cortex.—Bernhard Zondek and Michael Finkelstein have summarized their investigation on fluorogenic substances in the phenolic (estrone) fraction of urine and its relation to the adrenal cortex. The introduction of fluorometry as an analytical method for the determination of natural estrogens and of certain steroids related to the adrenal cortex added a new tool for the investigation of the steroid hormones and of their metabolites. The authors investigated the fluorogenic substances occurring in the phenolic and neutral fractions of urinary extracts.

As a result of these studies, the isolation of a new steroid compound from the neutral fraction of the pooled urine of two female pseudohermaphrodites could be accomplished. It was shown that the neutral fraction of normal male and female urine contains a fluorogenic substance. Whereas the excretion in male urine was of a uniform level, the excretion in female subjects was correlated to the excretion of estrogens during the menstrual cycle. The peaks of the excretion of the neutral substance usually preceded the estrogen excretion peaks by one or two days. In the last weeks of pregnancy the urinary excretion of the neutral fluorogenic substance was strongly augmented. Although the structure of the fluorogenic compound has been established only in case of the two pseudohermaphrodites, there is some evidence that the fluorogenic material present in the male and in the urine during pregnancy may have a similar constitution. A detailed study of the phenolic fraction was also undertaken. This fraction was partitioned into two subfractions: one water-soluble fraction that was tentatively called the "estriol fraction," and the second—insoluble in water but soluble in benzene and petroleum ether—called the "estrone-estradiol fraction." It is assumed that the estrone fraction contains a phenolic compound similar in structure to estrone or estradiol, but with a low or even failing estrogenic potency.

One of the pseudohermaphrodites was given 50 mg. of cortisone daily intramuscularly for five and one-half weeks. After this period the quantity of the injected cortisone was reduced to 25 mg. per day, and cortisone administration was continued for 13 weeks. The treatment caused a substantial decrease in the excretion of the fluorogenic compound of the estrone fraction in the first week (25 mcg.) per hour. At the same time the excretion of biologically active estrogens remained unchanged, and there was even a slight increase (60 mcg. per 24 hours). Two weeks after the treatment was started, an additional decrease of the fluorogenic material was observed (16 mcg. per 24 hours), with no change in the estrogen excretion. Continuation of cortisone injections for one month caused a rise in biologically active estrogens (100 mcg. per 24 hours). No recording of fluorogenic material was made at that time. Prolonged treatment with cortisone (69 days) brought the estrogens to a normal level, and later (113 days) a large drop was observed (3 to 5 mcg. per 24 hours). At the same time the fluorogenic substance remains on the low level (25 mcg. per hour). Under the influence of cortisone the excretion of the fluorogenic material of the estrone fraction rapidly decreases, whereas the biologically active estrogens do not seem to be affected for a long time.

Determination of Urinary Estriol for Diagnosis of Fetal Death.—The department of Prof. Bernhard Zondek has published a paper in *Harefuah* (45:142, 1953) on the determination of urinary estriol for the diagnosis of fetal death. The excretion of chorionic gonadotropin decreases in the second half of pregnancy and becomes less regular, so that the Aschheim-Zondek test based on the determination of chorionic gonadotropin is sometimes unreliable. In addition to chorionic gonadotropin the placenta produces estrogenic hormones, and it has been shown that large amounts of estriol can be extracted from the placenta. During pregnancy 90% of the urinary estrogens are in the form of estriol. This evidence suggested that the determination of estriol in the urine can be used as a test for placental function. A special method of separating estriol from the other estrogens was used, and the estriol was determined fluorometrically. Samples of urine from normal pregnant women were tested for estriol, and it was found that, while in nonpregnant women the estriol content does not pass 100 mcg. per liter, in the first three months of pregnancy the value of estriol reaches 400 mcg. per liter and after the fourth to fifth month, the rise is up to 4,000-5,000 mcg. per liter. During the last trimester the estriol values vary between 5,000 and 20,000 mcg. per liter. Further examination revealed that shortly after the death of the fetus in late pregnancy, the estriol excretion falls rapidly. The steep decrease of estriol in urine (less than 1,000 mcg. per liter) was therefore used as a method for determining fetal death in 28 cases.

In addition to the estriol determination, a quantitative Aschheim-Zondek test was made, using hyperemia in the ovary of infantile rats. The result can be summarized as follows: In nine patients the Aschheim-Zondek test was positive and the estriol determination gave normal values. In all these cases the fetus was living. In two patients the Aschheim-Zondek test and the estriol determination gave normal results; two days later there was an abortion. In both cases the fetus showed signs of life. In seven patients the low estriol content of the urine and the low values of the chorionic gonadotropin proved the death of the fetus, which was confirmed clinically. In 10 patients the estriol method proved to be superior to the determination of the chorionic gonadotropin for diagnosing fetal death. In seven of these patients the Aschheim-Zondek test indicated the placenta was still functioning (5,000 hyperemia units positive), whereas the low content of estriol in urine (less than 1,000 mcg. per liter) indicated that production of estrogen had already decreased markedly. The diagnosis of fetal death based on estriol content in these seven patients proved to be correct. In one patient with toxemia of pregnancy in the sixth month the urine was examined daily. The sudden decrease of estriol excretion indicated cessation of placental function and therefore death of the fetus. A few days later, a macerated fetus was expelled. If the Aschheim-Zondek test is positive and there is decrease of estriol (less than 1,000 mcg. per liter), the estriol test is considered the more reliable one.

The fetus can be dead in spite of the fact that both tests are positive, as happens in cases of primary, endogenous death of the fetus. In such rare cases the placenta can continue to function for several weeks. A diagnosis should never be made on the basis of a single urine examination, but should be repeated on the next day or for several days to reveal whether the hormone content is really decreasing.

Corticotropin in Blood in Pregnancy.—Bromberg, Sadowsky, and Sulman report the presence of corticotropin (ACTH) in the blood of pregnant women. It is known that corticotropin is responsible for increased pigmentation if it is given in high doses for a long time, if there is over-production by the pituitary of corticotropin (in Cushing's disease), if in Addison's disease an increased corticotropin output acts as a compensatory mechanism, or in pregnancy, which is characterized by an increased production of hypophyseal hormones in the placenta, including corticotropin. The determination of the chromatophorotropic factor in the blood was used as an assay of corticotropin levels. The validity of this assay was based on the following observations: corticotropin causes green-adapted amphibians to turn dark brown. The tree frog, Hyla arborea, reacts to doses of corticotropin as small as 0.01 to 0.001 mcg. It seems, therefore, that the chromatophototropic hormone is a fraction of corticotropin. Furthermore intermedin-treated guinea pigs excrete increased quantities of 17-ketosteroids.

Human beings have a poorly developed intermediate hypophyseal lobe. Intermedin is produced in man by the basophilic cells of the anterior pituitary together with corticotropin. Thus in nature corticotropin and intermedin together constitute corticotropin, although they are separable factors. This has been demonstrated in both animal and human corticotropin. By the chromatophorotropic reaction in the tree frog, the corticotropin blood levels of 150 women in different stages of pregnancy were examined. Blood corticotropin was found to be increased in 10 to 20% of the pregnant women.

This conforms with observations that often, but not always, rheumatoid arthritis is alleviated and 17-ketosteroid excretion is increased in pregnancy. In a certain percentage of pregnant women a brown pigmentation appears at sites that are not target areas of estrogenic hormones, e. g., the abdomen (pigmentation of the nipples and vulva is probably an estrogenic effect). Hence it seems that increased corticotropin production is a typical feature of pregnancy, but the pattern of effects manifested by the target tissues varies from patient to patient in accordance with the individual hormonal fluctuations in the blood. In all nonpregnant and normal patients so far examined, the corticotropin levels have been less than 1 frog unit per 20 cc. of blood or less than 50 units per liter. Immediately after labor, higher corticotropin levels (100 to 166 units per liter) were found in a large number of postpartum patients, apparently owing to operational stress.

LONDON

Royal Chest Hospital Closed.—Many will regret the closing of the Royal Chest Hospital, usually regarded as the first chest hospital in the world. It owes its origin to Dr. Isaac Buxton (1775-1825), a nonconformist minister who gravitated to medicine and graduated at Göttingen. He subsequently became physician to the London Hospital. Sir Astley Cooper was one of many interested in Buxton's thesis that there should be a special hospital for diseases of the chest, and he was largely instrumental in securing the Duke of Kent as the first president. It was the Duke who opened the Infirmary for Asthma, Consumption, and other Pulmonary Diseases, as it was originally named in 1814. It has never had more than 80 beds, and there have been times when it had no inpatients at all; it merely dealt with outpatients. It received commendation from Osler when, in 1912, arrangements were made for it to house the tuberculosis dispensary of the local borough. It was badly damaged during an air raid in 1941, and since then it has only been able to care for outpatients. It may never have attained the international fame of some of the other special disease hospitals of London, but Londoners have always regarded it with particular affection.

Disseminated Histoplasmosis.—The second case of disseminated histoplasmosis reported in this country is described by S. Locket and others (*Brit. Med. J.* 2:857, 1953). The patient was a man, aged 32, who had been in military service in Alexandria and Port Said and who had visited Durban and Bombay. He had not, however, been abroad since 1945. His symptoms dated from the end of 1951 when he complained of abdominal pain similar to that of peptic ulcer. When first seen in December, 1952, he had fever and had lost weight. His spleen, liver, and axillary glands were enlarged, and there were two ulcers in his mouth. These were 2 cm. in diameter, were granulomatous in appearance, and had a raised rolled edge. Marrow puncture was normal, and a histoplasmin intradermal test was negative. A roentgenogram revealed a spreading pulmonary lesion. Histoplasma capsulatum was grown from a biopsy specimen of one of the ulcers. There was no response to ethyl vanillate in doses of about 50 gm. daily, and the patient died suddenly in February, 1953. At necropsy, histological evidence of histoplasmosis was found in sections from the liver, spleen, lymph nodes, bone marrow, thyroid, and suprarenals. H. capsulatum was cultivated from the spleen, suprarenals, liver, lung, and bone marrow. The three patients with localized histoplasmosis who have been reported in this country had all been in India. In view of the prolonged incubation period, it is considered likely that other cases may now be expected to occur in this country in soldiers who lived in endemic areas during the war.

The Nuffield Foundation.—For the year ended March 31, 1953, the Nuffield Foundation has allocated grants totaling £713,696. In the field of rheumatism, grants have been made to Prof. F. G. Young for work on the isolation and purification of corticotropin (ACTH); to Prof. A. R. Todd for work on methods for the systematic structural analysis of oligopeptides and the synthesis of peptides; to Prof. W. T. Astbury for biophysical analysis of connective tissue and for studies on the controlled synthesis of collagen fibrils in tissue culture; and to Sir Robert Robinson for work on the synthesis of cortisone. The foundation has also set aside £25,000 to finance a five year research fellowship on the scientific aspects of aging.

The Drug Bill and Proprietaries.—The drug bill continues to be the item in the National Health Service budget selected for attack as the easiest way of saving money. The Minister of Health stated in public that he was worried about the cost of prescribing that, at the estimated sum of 46.3 million pounds for this year, is prejudicing many other urgent developments in the service. The suggestion that is always being advanced is that, if only practitioners would prescribe fewer proprietary and more official preparations, then the nation's drug bill would fall substantially over night. In 1948, proprietary preparations accounted for 24% of the total cost, and in 1952 they accounted for 56%. The Minister's latest move, therefore, has been to issue to every general practitioner a list showing the cost of some commonly used proprietary preparations and of some National Formulary preparations and comparing the cost of the proprietary preparation and that of the official equivalent. Of the 243 proprietary preparations listed, the cost, compared with the equivalent official preparation, is higher in 67, lower in 47, and the same in 10; no official equivalent is given for the remainder. The proprietary preparations that are cheaper than the official equivalent preparation are certain sulfonamides, barbiturates, vitamins, estrogens, and androgens. The Association of British Pharmaceutical Industry made the following comments: "The issue by the Ministry of Health of comparative costs for widely-prescribed proprietary drugs and their non-proprietary equivalents should effectively dispel the false impression that, in general, proprietaries are unnecessarily expensive." The *Pharmaceutical Journal,* the official organ of the Pharmaceutical Society of Great Britain, concludes an editorial on the subject by laconically remarking that "the most likely effect of the publication of the list is a general decline in prices due to competition between the two sides of the industry, indeed it has already begun." The *Lancet* comments: "These figures should dispel the impression that nearly all proprietary preparations are needlessly expensive; and clearly the practitioner can continue to prescribe some well-tried proprietary preparations without misgiving . . . the main saving is likely to come from a general lowering of costs through healthy competition between proprietary and official drugs."

The Minister and Regulations.—Reference has previously been made to the refreshingly practical, nondoctrinaire manner in which the present Minister of Health has tackled the difficult job of trying to make a success of the National Health Service. He recently expressed views that struck a responsive chord in the hearts of many practitioners when he said that there are far too many regulations about the work of executive councils. "Regulations fall from the Department like the leaves of autumn, to the dismay of any Minister asked to sign them. This is all wrong. Government by regulation has increased, is increasing and ought to be diminished." One reason given for this increase is that "the very professions who stand most strongly for professional liberty are most urgent in multiplying regulations. In consequence, executive councils are swaddled in red tape." The Minister expressed the hope that one day the stage may be reached when his department issues general guidance to be interpreted and adapted by executive councils to local conditions in light of common sense. "But," he added, "this presupposes that council members are of sufficient caliber and experience in the conduct of public business to be able to run local affairs in this way." This is a challenge that must be taken up by the medical profession and by those laymen who wish to free the service as much as possible from the red tape that has done so much to stultify the development of the service along reasonable lines.

NORWAY

A Controlled Study of Isoniazid.—In March, 1952, the manufacturing chemists, Nyegaard & Co., provided the medical department of Ullevaal Hospital with a supply of isoniazid that was distributed between this department and certain sanatoriums with a view to a comprehensive and controlled study of its effects on chronic pulmonary tuberculosis. Patients with far-advanced cavernous lesions and positive sputum, i. e., cases not suited for active treatment of any kind, were selected for this study. Twenty-eight patients were treated with 200 mg. of isoniazid daily for 12 weeks, while 19 patients suffering from the same type of lesion received inert tablets only. Neither the doctors nor the nurses knew which of the patients received isoniazid tablets. Careful records were kept of both groups with regard to temperature, weight, amount of sputum and tubercle bacilli, sedimentation rate, hemoglobin, urine, cough, and general status. The lungs were examined radiologically before and after treatment, and the final evaluation of the radiograms were undertaken collectively at a joint sitting before the examiners knew which of the patients had actually been given isoniazid.

With regard to the radiological findings definite regression was diagnosed only in 6 cases, and all of them belonged to the isoniazid-treated group. Thirteen of the 28 isoniazid-treated patients and 5 of the 19 controls showed possible regression. Statistical analysis showed that the chest roentgen findings indicated a definite difference with regard to improvement, with a 99% probability that this difference was not coincidental. A gain in weight occurred in 19 of the 28 isoniazid-treated patients and in 4 of the 19 controls. In other respects the difference between the treated and nontreated patients was slight. It would seem from this study, which is reported in the May, 1953, issue of the *Journal of the Oslo City Hospitals,* that the chemotherapeutic benefits from isoniazid are limited in patients with chronic, productive-fibrotic pulmonary tuberculosis with slight toxic manifestations. Since drug-resistant strains of tubercle bacilli emerged quite early in this study, the authors concluded that it is not justifiable in patients of this type to give isoniazid alone. The development of resistant strains may possibly be prevented by combining this drug with other chemotherapeutic measures or antibiotics.

A Norwegian Institute for Medical Statistics.—On the initiative of Prof. H. J. Ustvedt, who heads the Medical Department of Ullevaal Hospital which serves the city of Oslo, the Norwegian life insurance companies have granted 50,000 Norwegian kroner annually, for a period of five years, toward the establishment of an Institute for Medical Statistics at this hospital. In the past each of its various departments has worked independently in collecting and analyzing data that concern the long-term prognosis in different types of disease, and the assessment of the therapeutic effects of new drugs. These problems, in the future, will be dealt with at the new institute. Dr. Knut Westlund has been appointed chief of this institute. He was educated at the Johns Hopkins University School of Hygiene and Public Health. It is hoped that the pooling of the material of the various hospital departments in this way will ultimately mean a great economy of labor and yield easily available information of interest not only to life insurance companies, but also to the medical profession and the general public.

CORRESPONDENCE

CRITICISM OF PHYSICIANS

To the Editor:—Oftener and oftener we read in nationally circulated magazines and journals stories of rascality in the medical profession. These articles usually follow the same pattern—sensational exposé of "unnecessary" surgery, "ghost" surgery and fee-splitting, poor surgery, poor medicine, fee gouging, or some variation of these. Some of these stories have been almost venomously critical of unidentified physicians practicing in unidentified hospitals; some have given the identity of physicians and hospitals in the few isolated instances in which unethical practices were partially supported, at least, by expert medical investigators. All of the articles I have read, however well founded the criticisms may have been in the few such cases publicized, have had the effect of being adversely critical of the medical profession and of hospitals generally. For reputable magazines to lend their pages to what amounts to calumny against 99% of the members of a high profession hardly seems in keeping with our American tradition of fair play. To publicize nationally the unethical practices of a handful of physicians in a few scattered hospitals does many times more damage to the public and to physicians and hospitals undeserving of criticism than would be done by the handful of rascals, even if they were permitted to go on their way unchecked. Nothing grows like the seeds of suspicion, and these articles have undoubtedly and to a serious extent sown the seeds of suspicion in the public mind. If such writings continue to be published in a manner influencing public thinking against the medical profession, it won't be long until practically every physician with a hospital practice will be a suspect. And, if this should happen, the high standard of health that exists in this country by virtue of its efficient hospitals and competent physicians will decline, and the big loser again will be John Q. Public.

It seems reasonable to suggest that the national medical and hospital societies would do well to ask every publisher of note in this country to refuse to accept for publication any paper adversely critical of the medical care and treatment of patients in our hospitals without first thoroughly investigating the author's integrity and competence and obtaining from competent medical men in active practice absolute proof of the validity of the material that the author submits for publication. Such articles, if they must be circulated nationally, should not generalize as most of them do. They should be specific and should deal with the local situation giving rise to them. Above all they should make clear that the person or institution written about is a specific one and that the criticism does not necessarily apply to other physicians and hospitals.

I have been engaged in hospital organization and management for 10 years during the course of which I have been closely associated professionally with about 300 physicians in several public, quasipublic, and private hospitals. Each of these hospitals, particularly the public and quasipublic type, represents good average hospital staff organization. They are dependable and proud of the work they are doing in and for their communities. Not one of the 300 physicians has to my knowledge been a renegade from his profession, unusual as this may seem to the chronic critic of the hospital medical practitioner. Certainly the same can reasonably be regarded as generally true of practically all hospital staff organizations.

I hope that this letter will not create the impression that, in my capacity as a hospital administrator, I have the slightest sympathy for the unethical and callous physician. If he is incorrigible, he is a despicable person unworthy of membership in the medical profession. But those qualified to discipline him should be given an opportunity to do so before smearing the individual case over the land in magazines and inviting destruction of the confidence of the American people in the most indispensable services there are. The organized hospital medical staff, with the backing of an honest board of trustees and administration, can and will in the normal course of events eliminate the unethical practitioner of medicine in whatever community he may be found. Publicity, universally unfavorable to physicians and hospitals, born of the thinking and opinions (and, sometimes, prejudices) of a few hospital administrators both lay and professional, newspaper reporters, university professors, and others with a flair for writing but without qualification as medical clinicians, cannot possibly contribute to the advancement of medical and hospital care of the patient.

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SEXUAL BEHAVIOR

To the Editor:—Kinsey and associates' "Sexual Behavior of the Human Female" merely "dusts off" many abandoned theories and adds few useful facts to the study of female sexual behavior. Through the widespread interest in the volume, however, sexual behavior now is discussed more openly, and it is evident that there is a vast difference between what one practices and what one preaches. Also, Kinsey's views may help change our too punitive laws dealing with sexual deviations, particularly those advocating castration as a means of curbing perverse tendencies. These laws are little or no help to offenders. Despite these good points, millions of persons are uncritically accepting the controversial inferences of the Kinsey report. Physicians are being bombarded with questions concerning the Kinsey report; therefore, prompt correction of Kinsey's faulty inferences is mandatory to prevent their perpetuation as dogma.

First, the 5,940 women interviewed are only 1/14,000 of the adult female population—a tiny and completely unrepresentative segment of the typical American woman. Of the volunteers 75% went to college, while only 7.5% of the women in the country have done so. Single women were three times greater than the total number at large. Devoutly religious women, who are more faithful, were not adequately represented. In view of these facts, an atypical sample was used as a distorted yardstick. Dollard noted that the choice of the volunteers is decisive since "each unit in the Kinsey sample stands for approximately 10,000 people; if a hundred are mischosen, one million people are misrepresented." Also, normal women will seldom reveal intimate sexual matters to a stranger who rapidly asks 300 to 500 questions in a one or two hour interview. Most persons are inconsistent even when paying for help over sexual problems. Hence, one of Kinsey's basic methodological errors is that many women, in a nonmedical situation, are apt to be evasive about their sex life, particularly, when poor motivations for telling the truth are present.

Many volunteers had neurotic reasons for their "revelations." Those who felt guilty over abnormal sex patterns "confessed," thus easing their consciences of real or imagined guilt. Those who either lacked sex experience or who had been sexually rejected used the interviews to inflate their egos by exaggeration and exhibitionism. Some probably wanted advice. Direct questions rarely elicit the *raison d'etre* for behavior, especially, sexual conduct. We also question the validity of the interviews because nearly all persons have "screen memories." These memories distort earlier events; such distortions are maintained regardless of the number of interviews and cross checks. It is easy not only to forget, but to "mis-remember" things that never happened!

Kinsey argues that inasmuch as all types of sexual behavior occur in subhuman species, these patterns are normal for humans. This kind of logic disregards all the ethical, religious, and moral advances mankind has made. His analogy that that which is the commonest is *ipso facto* normal is also incorrect and is the basis for other faulty inferences. Thus, normal human sex behavior is predicated on a high incidence curve and, as mentioned, on a similarity with "mammalian behavior." Both predications are erroneously applied. In volume 1, premature ejaculation is normal, because it is so prevalent and "quite normal among mammals." In volume 2, Kinsey declares that vaginal orgasm is nonexistent because the human vagina has relatively few nerves. This relative insensitivity was deduced by gently stroking the vaginal walls with a glass, metal, or cotton-tipped probe in a gynecologist's office. Kinsey and his gynecologic advisors did not consider the proprioceptivity or deeper sensations of the pubococcygeus and other muscles inserted on the vaginal walls. These muscles are stimulated during the stretching and relaxation produced by copulatory movements. Furthermore, the erect penis certainly cannot be compared with a wisp of cotton on an applicator. There is also a distinct difference between the emotional situation in intercourse and that in the "examination." Most authorities contend that vaginal rather than clitoric orgasm is more desirable. Since subhuman species probably never experience orgasm; the mammalian vagina is no doubt merely a receptacle for the deposit of semen. In the human, however, genital union is associated with impulses that involve the total personality.

Kinsey also abandons the whole medical concept of perversions and puts heterosexuality on the same level with homosexuality and animal contact. Specifically, six sexual "outlets," masturbation, spontaneous nocturnal emissions, petting, heterosexual intercourse, homosexual contact, and animal contact, are described. One can imagine what conclusions perverts, especially homosexuals, will draw from such peculiar approval. In volume 1, 37% of males had experienced some homosexual contact; thus Kinsey created the myth of a new national disease—homosexuality! In arriving at these fantastic figures, prepubertal and adolescent sex play, such as mutual exploration of the genitals, were included under homosexual contact. He did not differentiate early homosexual contact, homosexual tendencies, and overt homosexuality. By such reasoning, if all persons who ever received a ticket for a traffic violation were considered law breakers, then over 75% of the population of the United States would be criminals. Kinsey was probably duped by many of his homosexual volunteers, who used him for their own specific purposes. Male homosexuals diminished their guilt by proving that everyone has homosexual tendencies (they convinced all their friends to volunteer, thus increasing the percentage of homosexuals). On the other hand, Kinsey is surprised that his percentages of female homosexuals were low. He overlooked hidden lesbians who did not reveal themselves, especially those living in heterosexual marriages because of social and economic advantages.

His yardstick of sexual satisfaction is also faulty because he assumes that orgasm is orgasm regardless of how it is achieved. To Kinsey, women who have a high score of sexual "climaxes" are sexually well adjusted. Hence, he ignores the basis for mature human sexual behavior, namely, that something called "love" exists. The healthy sex act consists of very complex psychological phenomena. It depends on the spiritual merger of one personality with another. The sex impulse in humans is tied to the deepest emotions and should result in what is called true love in the finest sense. Love simply cannot be measured on an IBM machine! Orgasm per se means nothing. Orgasm is present in many neuroses, yet the whole personality is sick. For instance, if a woman is frigid in her marriage and can only experience orgasm in a clandestine extramarital relation, orgasm is not a certificate of health but of neurosis. The same applies to a woman who requires perverse acts to achieve orgasm. This is why we differ with Kinsey on the incidence of frigidity. He contends that, as a result of counting "climaxes," only 10% of women are frigid. Because we stress quality rather than quantity in healthy sexual response, frigidity is much higher, perhaps, closer to 75%. It is so widespread in our culture that it is the emotional plague.

Kinsey's greatest error is his contention that most of the stimulation in a woman during coitus is derived from the external areas of the vulva, the outer edges of the labia, and the clitoris with the pubic areas of the partner. Thus he apparently elevates the skin, hair, and pubic bone of the male to the sex organs. He further contends that girls who pet to orgasm before marriage have a better chance of achieving sexual adjustment in marriage; that girls who do not pet are apt to remain unmarried; and that girls who pet acquire some wisdom in choosing a husband and are less nervous. Such advice is scientifically wrong. There is no premium for premarital petting to orgasm. There are no penalties for not indulging in this manner. Experience proves that neurotic girls are the most persistent petters and that emotionally healthy girls usually reject sex without love. Successful marriage and sexual adjustment are based more on gradually established confidence, liking, and mutual respect than on any premarital trial and error sexual processes.

The biting attack on single school teachers is unjustified. There are just as many unhappily married women as single and half-contented women. Is a climax certificate necessary before the single woman is eligible to aid in the guidance of our youth? Kinsey also finds that women are sexually stimulated more by romantic movies, romantic literature, and being bitten. Many volunteers must have been peculiar if they enjoyed being bitten in the sex act. Normal women would object to this procedure. Only neurotics—those who enjoy pain as pleasure—would enjoy being bitten. Hence the sample must have been loaded with atypical and masochistic women. Kinsey, on the basis of correlation with declining hormonal levels (17-ketosteroids) thinks that man's sexual peak is reached in his teens. He overlooked the fact that many neurotic men become impotent after obtaining the "forbidden" (sex contact with wife). Also, some impotent men are hypochondriacs and lose interest in sexual activity because of "heart trouble" or high blood pressure. If their neuroses are treated and their hypochondriacal symptoms relieved, many are sexually adequate up to the age of 60 or 70. Kinsey recognizes that cultural taboos toward sex are very powerful in women, yet he expects them to respond as rapidly in orgasm as men. The peak of sexual excitement will nearly always be much slower in the female because, consciously or unconsciously, most females in the reproductive age fear pregnancy (even when contraceptives are used). Kinsey dismisses this fear, stressing the safety of contraceptives.

Kinsey's nonpsychiatric approach cannot elicit neurotic tendencies. He refers to husbands who encouraged their wives' infidelity. These neurotic men are usually bisexual, impotent, or philanderers. The exculpation then justifies the husband's own sex behavior and alleviates the wife's guilt. Obviously, therefore, the answers to questions on sex behavior are of little value. What is important, however, is the interpretation of the underlying motivations for this behavior! Kinsey ignores this fundamental factor of dynamic psychiatry. He consistently sticks to behavioristic superficialities and refuses to interpret his data on female sexual behavior according to the well-established principles of dynamic psychiatry and psychosomatic gynecology. In the former, he completely neglects the dynamic unconscious; hence, neurosis. In the latter, he refuses to acknowledge that there is an interaction and interdependence of emotions and bodily functions accounting for sexual symptomatology and behavior.

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BUREAU OF LEGAL MEDICINE AND LEGISLATION

MEDICOLEGAL ABSTRACTS

Privileged Communications: Need for Establishment of Physician-Patient Relationship.—This was an action to recover on a life insurance policy issued to the deceased president of Ranger, Inc., the plaintiff. From a judgment in favor of the defendant insurance company, the plaintiff appealed to the United States court of appeals, sixth circuit.

In 1943 the deceased had been hospitalized for one day for the removal of a birthmark or a mole on the top side of his face. He was discharged as "recovered" the same day, with Dr. Ackerman as the attending physician. The deceased died in 1948 of metastatic malignant melanoma, which the proof showed to be a form of cancer. At the trial Dr. Ackerman was called as a witness by the defendant and testified over the plaintiff's objection that, for a period of several months prior to 1943, he had observed a small growth on the deceased's face that had a distinctly black appearance and that it was his opinion that just prior to its removal the growth was changing in its characteristics and becoming larger. Dr. Hand, one of the expert witnesses, stated that, in his opinion, there was a direct connection between the tumor that was growing larger in 1943 and the deceased's death in 1948 and that the deceased had a malignant tumor in January, 1947, when the policy was issued.

The plaintiff contended that the testimony of Dr. Ackerman was inadmissible as privileged under the well-established physician-patient rule. Michigan Statutes Annotated provides: "No person duly authorized to practice medicine or surgery shall be allowed to disclose any information which he may have acquired in attending any patient in his professional character, and which information was necessary to enable him to prescribe for such patient as a physician, or to do any act for him as a surgeon: . . ." It seems clear, said the court, that the patient or his personal representative may invoke the privilege and also that the widow beneficiary of an insured may do so. The defendant contended that a business beneficiary as contrasted with a relative beneficiary can not invoke the privilege, but the court said that an assignee of the beneficiary has the status to invoke the privilege. Such privilege may be waived, however, the court continued. In the present case, the wife of the deceased gave written authorization to the physicians who had treated her husband to furnish to the representative of the insurance company who was investigating the case the facts pertaining to the deceased's illness and cause of death. The defendant claims this was a waiver of the privilege. The court, however, held otherwise and pointed out further that, although the death certificate was properly admitted in evidence, it did not operate as a waiver of the privilege so as to permit the physician who made out the certificate to testify generally about the patient's condition. Nor was the privilege waived by statements in the proof of death furnished to the insurance company. However, the evidence of Dr. Ackerman was admitted by the trial court on the theory that the physician-patient relationship had not come into existence at the time Dr. Ackerman noticed the change in the growth on the deceased's face. There is some conflict in the evidence on this point. Dr. Ackerman and the deceased were friends socially and saw each other frequently before Dr. Ackerman became professionally interested in the case. What he observed during that period of time and what could be also observed by any other person in similar contact with the insured is not covered by the rule of privilege. As to the exact time when Dr. Ackerman made the observation about the change in the size and characteristics of the growth, which the evidence shows was "just prior to its removal," the trial judge found as a fact, *before admitting the testimony*, that the professional relationship did not then exist. In our opinion, said the court of appeals, this preliminary finding of fact is fairly supported by the evidence and must be accepted on appeal. The plaintiff contended, however, that, although the relationship did not exist at that time, the observation by Dr. Ackerman was privileged because it was used by Dr. Ackerman, when later employed, in making his diagnosis and prescribing the treatment. We do not agree, said the court of appeals. The statute uses the conjunctive "and," rather than the disjunctive "or," and clearly implies that both conditions must exist in order to make the testimony privileged, namely, (1) the professional relationship and (2) that the information was necessary to enable the doctor to prescribe.

The plaintiff also objected to the testimony of Dr. Hand as being privileged. The evidence shows that the physician-patient relationship existed between Dr. Hand and the deceased. Much of the testimony of this witness was in the nature of expert medical testimony concerning skin diseases, pigmented moles, and melanoma in general, without reference to the deceased, and did not violate the rule. The trial judge carefully limited the testimony, with respect to the deceased, to the facts that the deceased *consulted him professionally*, the dates of attendance, and the presence of the mole. Testimony by a physician about dates of attendance, said the circuit court of appeals, is not privileged. The presence of the mole on the side of the deceased's face was established by other competent testimony, and any error in receiving Dr. Hand's testimony in that respect was not prejudicial. This and other contentions of the plaintiff were denied, and the judgment in favor of the defendant was affirmed. *Ranger, Inc. v. Equitable Life Assurance Society of United States, 196 F. (2d) 968 (1952).*

BUSINESS PRACTICE

The following material is based on a public relations manual issued by the Public Relations Department of the American Medical Association.—Ed.

INSURANCE PLANS

Because medical fees are the basis for much criticism of the medical profession, voluntary health insurance plans that assist the patient in paying his medical and hospital expenses greatly improve the doctor-patient relationship. Physicians can help the profession and the patient by promoting such insurance plans. It is an especially good idea to recommend these plans to patients who seem to have difficulty in meeting their medical expenses. The success of voluntary health insurance plans is the best proof that the private system of providing medical benefits is better than government control.

The physician can also aid patients in using their policies. Before a surgical procedure, for example, the doctor can discuss insurance coverage when talking about the fee for the operation. Then the patient is prepared for just how much of the cost he will have to bear. Because many persons do not understand insurance and also do not bother to read the "fine print," the physician may have to explain the policy to a patient. This often requires great tact, especially when a patient learns he has a policy that takes away in fine print the benefits outlined in large print. The physician and his office should help process insurance claims quickly and correctly. The patient identifies the insurance company with the doctor and the hospital, and, if his rightful claims are not settled to his satisfaction, he may be bitter toward all three.

In a few instances, physicians have been guilty of increasing their fees so that patients could get larger amounts from insurance companies or of listing a major operation when a minor operation was actually performed. Such fraud cheats the doctor himself in the long run, for it boosts insurance premiums, makes it necessary to reduce policy benefits, and eventually dries up the source of the physician's fees. Appropriate action should be taken by mediation committees of medical societies when such frauds are discovered. Though there are inequities in insurance payments, the doctor should work through his medical society to correct them. He should promote voluntary health insurance plans and cooperate with the patient and the insurance company to the best of his ability.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Dermat. and Syphilol., Chicago

68:363-480 (Oct.) 1953

Sherlock Holmes as Dermatologist with Remarks on Life of Dr. Joseph Bell and Sherlockian Method of Teaching. J. V. Klauder.—p. 363.
Streptomycin in Treatment of Cutaneous Tuberculosis. L. Adoni.—p. 378.
Carbuncle Caused by Gaffkya Tetragena Treated with Oxytetracycline (Terramycin). I. Zeligman and S. J. Sinesi.—p. 382.
Observations on Peripheral Circulation in Psoriasis. S. E. Huff and H. L. Taylor.—p. 385.
Corrective Surgical Planing of Skin: New Technique for Treatment of Acne Scars and Other Skin Defects. A. Kurtin.—p. 389.
Multiple Superficial Epitheliomatosis: Spectroscopic Study. W. A. Rosenberg.—p. 398.
Role of Colloidal Oatmeal in Dermatologic Treatment of the Aged. M. L. Grais.—p. 402.
*Correlation of Rate of Growth with Histologic Characteristics of Basal Cell Carcinoma. H. A. Teloh.—p. 408.
Isoniazid in Treatment of Chronic Lupus Erythematosus. B. Appel, G. R. Baler and E. F. Dougherty.—p. 417.
Pseudoainhum: Report of Congenital Case Involving Several Fingers and Left Wrist. A. Neumann.—p. 421.
Inhibition of Tyrosine-Tyrosinase Reaction by Microsporum Audouini: Preliminary Report. H. M. Robinson Jr., F. H. J. Figge and E. S. Bereston.—p. 428.
*Axillary Odor: Experimental Study of Role of Bacteria, Apocrine Sweat, and Deodorants. W. B. Shelley, H. J. Hurley Jr. and A. C. Nichols. —p. 430.

Rate of Growth of Basal Cell Carcinoma.—According to Teloh basal cell carcinomas may exhibit widely varying rates of growth. On the one hand, a small, circumscribed, nonulcerated lesion may have been present for a number of years and may well merit the term nevus or hamartoma; on the other hand, a lesion with a similar histological picture may progress slowly but inexorably, with eventual invasion and destruction of large areas of tissue. In order to correlate biological behavior of basal cell carcinoma with variations in histological architecture, Teloh studied 100 basal cell carcinomas of the skin with reference to size, duration, and presence of various histological characteristics. The mean growth ratio (size in millimeters to duration of tumor in months) was compared with histological characteristics. The slowly growing basal cell carcinomas showed a predominance of the following characteristics: occurrence in younger patients, presence of peripheral palisading, cystic change, and adenoid change. The rapidly growing tumors were characterized by a high incidence of marked inflammation and evidence of invasion of surrounding tissue. In most comparisons, the differences in mean growth ratios were not statistically significant but indicated the advisability of further study of the problem. A significantly greater degree of inflammation and centrifugal invasion was noted in rapidly growing tumors.

Axillary Odor.—In studying the physiology of the apocrine gland, Shelley and associates were impressed by the lack of appreciable odor in pure apocrine sweat as it initially appears on the skin surface. It was noted that on standing such sweat developed a definite foul odor, which increased in intensity as time progressed. The realization of this fact prompted an investigation of axillary odor, with particular reference to the specific roles of bacteria, apocrine sweat, and deodorants. It was found that axillary micro-organisms acting on the apocrine sweat in vitro promote the development of the typical acrid axillary body odor in a few hours. Exclusion of these organisms (sterile apocrine sweat) or inhibition of their growth (addition of hexachlorophene to the sweat) prevents any odor from developing. The intensive use of hexachlorophene detergent preparations abolishes the axillary odor for more than 18 hours in most persons. The presence of hair greatly increases axillary odor, since it acts as a collecting site for axillary secretions, debris, keratin, and bacteria. Shaving and careful washing of the axilla eliminate odor for more than 24 hours. Pure eccrine sweat, whether sterile or unsterile, neither has nor develops an odor. Eccrine sweat contaminated with sebum, keratin, or debris develops odor presumably as a result of bacterial action. This odor is mild and very distinct from the odor developing in pure apocrine sweat. The role of the eccrine sweat in the production of axillary odor consists of an accentuation of bacterial growth and also the volatilization of the odoriferous compounds derived from apocrine sweat. No significant reduction in eccrine or apocrine sweating was seen after the use of preparations containing aluminum salts, but the aluminum preparations had demonstrable deodorant activity. Daily applications of these substances abolish or alter the usual axillary odor in many persons for 12 to 18 hours. This deodorant activity in the case of aluminum chloride is based on antibacterial action and a chemical effect on the odoriferous products.

A.M.A. Arch. Ind. Hyg. & Occupat. Med., Chicago

8:299-390 (Oct.) 1953

Relationship Between General Practitioner and Industrial Physician. E. F. Lutz.—p. 299.
Experimental Studies on Cancerigenesis of Synthetic Liquid Fuels and Petroleum Substitutes. W. C. Hueper.—p. 307.
Methyl Chloride Intoxication: Report of 15 Cases. H. Hansen, N. K. Weaver and F. S. Venable.—p. 328.
Toxicity and Health Hazards of Boron Hydrides. E. H. Krackow.—p. 335.
*Occupational Allergic Reactions Among Workers in Penicillin-Manufacturing Plant: Simple and Inexpensive Method of Diagnosis and Treatment. A. E. Roberts.—p. 340.
Excretion of Diazotizable Metabolites in Man After Aniline Exposure. D. L. Hill. —p. 347.
Studies on Toxicity and Mechanism of Action of Some New Insecticidal Thionophosphates. K. P. DuBois, J. Doull, J. Deroin and O. K. Cummings.—p. 350.
Applications of X-Ray Diffraction Analysis in Environmental Field. D. Lennox and J. Leroux.—p. 359.
Toxicity Studies of Acetone Cyanohydrin and Ethylene Cyanohydrin. F. W. Sunderman and J. F. Kincaid.—p. 371.
Toxicity and Hazard of Diisobutyl Ketone Vapors. C. P. Carpenter, U. C. Pozzani and C. S. Weil.—p. 377.
Semiportable Air-Sampling System. L. J. Leach, R. H. Wilson, K. E. Lauterbach and others.—p. 382.

Allergic Reactions Among Workers in a Plant Manufacturing Penicillin.—Roberts presents three cases of occupational allergy to penicillin, two of which were of the respiratory and one of the cutaneous type. The symptoms and signs were so severe that the workers would not have been able to continue their work had they not obtained relief. The customary manner of disposition of employees in whom symptoms and signs of allergy to penicillin developed has been active treatment of cutaneous lesions and respiratory episodes. If recurrent attacks precluded regular employment, the worker was then permanently discharged. It occurred to Roberts that if hyposensitization could be achieved economically and with relative certainty employees would benefit by being able to continue working and the employer would benefit by diminished absenteeism and labor turnover. Roberts used the same preparations of allergenic suspensions for cutaneous testing and for hyposensitization in the three cases presented. The workers exhibited some degree of sensitivity to penicillin, according to the results of the scratch tests, before hyposensitization. As little as 24 units of penicillin injected subcutaneously was sufficient to cause both local and systemic reactions in one highly sensitive person. The three patients became asymptomatic during the courses of hyposensitization and have remained free from symptoms in the working environment during

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Titles marked with an asterisk (*) are abstracted.

a follow-up period of several months. After hyposensitization, none of the patients demonstrated a positive reaction to scratch tests at either the 20 minute or the 24 hour interpretation.

A.M.A Arch. of Surgery, Chicago

67:493-628 (Oct.) 1953

*Hürthle Cell Carcinoma. I. S. Goldberg.—p. 495.
Urological Complications Following Abdominoperineal Resection of Rectum. G. O. Baumrucker and J. W. Shaw.—p. 502.
Transverse and Muscle-Splitting Abdominal Incisions. L. T. Palumbo and I. A. Katz.—p. 514.
Differential Hypothermia for Intracardiac Surgery: Preliminary Report of Pump-Oxygenator Incorporating Heat-Exchanger. E. C. Pierce and V. B. Polley.—p. 521.
*Adequate Breast Biopsy: Experience in 1,000 Consecutive Personal Cases. T. A. Shallow, F. B. Wagner and R. E. Colcher.—p. 526.
LaRoque Approach to Inguinal Hernias in Pediatric Patients. W. W. Hoback and G. D. Vermilya.—p. 537.
Experimental Subphrenic Abscess. E. Hoffman.—p. 540.
Complications Associated with Use of "Controlled Hypotension" in Anesthesia. L. J. Hampton and D. M. Little Jr.—p. 549.
Simultaneous Quadrilateral Gangrene. N. D. Wilensky, M. M. Fisher, A. Moldovan and G. J. Gherardi.—p. 557.
Primary Tumors of Rib: Review of Literature and Report of 11 Cases. L. A. Hochberg.—p. 566.
Leiomyoma of Esophagus. J. R. Wilder and S. W. Moore.—p. 595.

Hürthle Cell Carcinoma.—Lesions formerly known as Hürthle cell tumors of the thyroid, once thought to be benign but now considered malignant and renamed Hürthle cell carcinoma, appeared in surgical specimens of the thyroid glands of 22 (1.7%) of the 1,330 patients who underwent subtotal thyroidectomy during the period 1927-1952 at either the Yale University Surgical Service or the Grace-New Haven Community Hospital. Solitary adenomas occurred 486 times in this series, and malignant thyroid tumors were found in 73 patients. The incidence of Hürthle cell carcinoma was 4.5% of solitary adenomas surgically excised and 30% of the malignant thyroid tumors. Nine tumors were of the trabecular type, seven of the alveolar type, and two of the papillary type; the remaining four tumors were mixed, with trabecular, alveolar, and large follicular elements in various combinations. Blood vessel invasion was present in eight tumors, but in only one case were distant metastases noted. Hürthle cell carcinoma can metastasize extensively, however, and it is on this basis that it must be considered malignant. Clinically, it resembles a benign adenoma. Proper management of this disorder requires that all solitary nodules of the thyroid be surgically excised, preferably by lobectomy. Radical neck dissection should be reserved for those cases in which there is clinical evidence of spread of the tumor or in which there is residual or recurrent tumor. External irradiation and administration of radioactive iodine have not proved effective in treating Hürthle cell carcinoma.

Adequate Breast Biopsy.—Of 1,000 consecutive breast biopsies done in the past 10 years by the authors, 740 revealed benign lesions and 260 malignant ones. The benign lesions were divided as follows: cystic hyperplasia, 619 cases; fibroadenoma, 86 cases; duct papilloma, 31 cases; gynecomastia, 29 cases; lipoma, 12 cases; fibrofatty tissue, 8 cases; fat necrosis, 3 cases; tuberculosis, 2 cases; plasma cell mastitis, 2 cases; and supernumerary breasts, 2 cases. The malignant lesions were divided as follows: carcinoma, 256 cases (scirrhous, 186; medullary, 45; duct cell, 18; and mucinous 7), and sarcoma, 4 cases (fibrosarcoma, 2; cystosarcoma phyllodes, 1; and Hodgkin's disease, 1). The authors feel that prompt biopsy of any localized area varying from the surrounding tissue is necessary for the earlier diagnosis of breast cancer and that "watchful waiting" is a dangerous policy that may prove harmful to the patient. To be adequate, breast biopsy must consist of the removal of sufficient tissue to reveal the presence of any obvious or occult cancer by immediate thorough pathological examination. Wide excision biopsy is particularly indicated when the clinical diagnosis is thought to be a localized cystic hyperplasia; cancer was associated with cystic hyperplasia in 15.4% of the total cases of cancer in the authors' series. All patients with discharge from the nipple are suspected of having cancer, whether or not a mass is palpable in the breast; 18.3% of patients with nipple discharge had cancer. In these cases, wide excisional biopsy is indicated, since multiple lesions are frequently present. When cancer of both breasts is suspected, bilateral biopsy should be performed, even if examination of the material from the more suspicious one reveals a benign lesion; cancer existed in the less suspicious breast of 3.1% of patients with cancer in the present series. Recurrent tumors of the breast deserve biopsy just as promptly as the initial ones, since the chances of cancer are just as great. Biopsy of the male breast should not be neglected. There are no clinical signs that reassure against cancer; it was found in 13.5% of the patients in the cancer group who had not demonstrated any clinical signs of it.

American Journal of Clinical Pathology, Baltimore

23:951-1060 (Oct.) 1953

Classification of Hypoprothrombinemias Based on State of Prothrombin in Human Blood. A. J. Quick, F. T. Flood and C. V. Hussey.—p. 951.
Chronic Atrophic Gastritis: Histopathologic Study of Gastric Mucosa of Patients with Gastritis Diagnosed by Gastroscopy. E. D. Palmer and V. M. Smith.—p. 965.
Paroxysmal Nocturnal Hemoglobinuria with Hemosiderin Nephrosis. E. J. Heitzman, J. S. Campbell and M. Stefanini.—p. 975.
Terminology of Blood Groups. A. S. Wiener.—p. 987.
Metastasis to Liver in Portal Cirrhosis. J. B. Wallach, W. Hyman and A. A. Angrist.—p. 989.
Enterochromaffin and Pancreatic Alpha Cells: Comparison. J. H. Fodden.—p. 994.
Effects of Monosaccharides and Disaccharides on Beta Cells of Islets of Langerhans. S. T. Nerenberg.—p. 999.
*Experiments with Chemicals Noxious to Pancreatic Alpha Cell. J. H. Fodden.—p. 1002.
Pathologic Changes in So-Called Cat-Scratch Fever: Review of Findings in Lymph Nodes of 29 Patients and Cutaneous Lesions of 2 Patients. T. Winship.—p. 1012.

Experimental Chemical Injury to Pancreatic Alpha Cells.—Fodden points out that the pancreatic islet tissue is again the focus of attention as a possible source of another hormone concerned with the sugar metabolism. A chemical factor with hyperglycemic properties has been presumed to originate in the alpha cells of this endocrine system. Methods of its preparation from the pancreas, and its isolation from simultaneously extracted insulin have served to define its identity; the crystalline form of the substance has recently been described. In addition, chemical means have been used to injure the alpha cells so that any effects of the deprivation of their secretion on the living organism may be studied. This paper is concerned with experiments with the two chemical compounds: cobaltous chloride and decamethylenediguanidine (known also as synthalin A). Cobaltous chloride caused degenerative morphological changes in many of the alpha cells. Metabolic aberrations did not ensue, either in normal or in alloxan-diabetic rabbits. Decamethylenediguanidine hydrochloride, known to initiate cytological abnormalities consistent with the hyperfunction-exhaustion hypothesis of secretory cells, produced hypoglycemia. In normal animals, its trend was uncomplicated by ketonemia or ketonuria; in animals with alloxan-diabetes, a ketotic and lipemic state resulted. It was believed that a chemical nesidiectomy was produced. The suggestion is made that, in diabetes resulting from deficiency of insulin and in which there is also functional inadequacy of alpha cells, glyconeogenesis from fat must fail and a state of ketosis result.

American J. Digestive Diseases, Fort Wayne, Ind.

20:293-330 (Oct.) 1953

Front and Side-View Cholecystography, with Study of Angle of Vesicular Erection, of Volume of Gall-Bladder and of Volumetric Coefficient of Evacuation. G. Albot, J. Toulet, G. F. Bonnet and C. Moullart.—p. 293.
A- and B-Cells of Pancreatic Islets as Sources of Antagonistic Hormones Glucagon and Insulin: Shift of Ab-Relation in Diabetes Mellitus. H. Ferner.—p. 301.
Anorexigenic Effect of Sustained-Release Dexedrine Preparations. E. P. Gelvin, T. H. McGavack and S. Kenigsberg.—p. 307.
Observation on Influence of Tapeworm Infestation in Dog on Secretion of Intestinal Juice. W. Koskowski and M. Mahfouz.—p. 313.
Multiple Perforations Occurring During Treatment of Ulcerative Colitis with ACTH. J. F. Pessel, E. B. Beairsto, M. H. Edwards and others.—p. 318.
Hypopotassemia Due to Cardiospasm. M. J. Barrash and M. M. Kirshen.—p. 322.

American Journal of Medicine, New York

15:439-590 (Oct.) 1953

Genetic and Biochemical Aspects of Wilson's Disease. A. G. Bearn. —p. 442.
*Liver Dysfunction in Hepatolenticular Degeneration: Review of 11 Cases. E. C. Franklin and A. Bauman.—p. 450.
Hypokalemia in Liver Cell Failure. E. L. Artman and R. A. Wise. —p. 459.
Pulmonary Function in Sarcoidosis: Results with Cortisone Therapy. D. J. Stone, A. Schwartz, J. A. Feltman and F. J. Lovelock.—p. 468.
Therapy of Sarcoidosis. F. J. Lovelock and D. J. Stone.—p. 477.
Renal Complications of Sarcoidosis and Their Relationship to Hypercalcemia: Report of Two Cases Simulating Hyperparathyroidism. G. Klatskin and M. Gordon.—p. 484.
*Physiologic Evaluation and Management of Chronic Bone Marrow Failure. V. Loeb, C. V. Moore and R. Dubach.—p. 499.
Radioactive Iron Absorption in Siderosis (Hemochromatosis) of Liver. R. E. Peterson and R. H. Ettinger.—p. 518.
Metabolic Studies in Gout with Emphasis on Role of Electrolytes in Acute Gouty Arthritis. M. H. Levin, J. B. Rivo and S. H. Basset. —p. 525.
*Correlations of Structure and Function and Mechanisms of Recovery in Acute Tubular Necrosis. J. Oliver.—p. 535.
Inheritance of Diseases Primary in Muscles. F. E. Stephens.—p. 558.

Liver Dysfunction in Hepatolenticular Degeneration.—The classic notion regarding hepatolenticular degeneration (Wilson's disease) is that, although signs of hepatic dysfunction are found at necropsy, they do not appear during the patient's lifetime. Twelve cases of the disease have been seen at the Montefiore Hospital in New York since 1934. One was not included in this review because the patient was observed only for five days. Of the 11 cases studied, clinical signs of liver disease were apparent in 7. Five of these patients showed symptoms of liver disease prior to any neurogenic disorder; in the other two, symptoms and signs of hepatic failure appeared during the course of the illness. Laboratory findings confirmed the clinical impression of hepatic insufficiency; they added little in the way of diagnosis. In the six livers examined at post mortem, two of which were from patients who had shown no hepatic symptoms while living, the findings were typical of advanced multilobular cirrhosis. From this study it appears that frank hepatic decompensation is common in hepatolenticular degeneration.

Chronic Bone Marrow Failure.—With the physiological techniques currently available, the erythropoietic equilibrum in patients with diseases characterized by failure of bone marrow function can be evaluated by measuring rates of red blood cell production and destruction. Data derived from these techniques were applied to the clinical management of 10 patients with chronic bone marrow failure. It was possible to demonstrate that (1) increased destruction of erythrocytes was partly responsible for the anemia in some cases and (2) cortisone or corticotropin (ACTH) administration occasionally increased the rate of erythrocyte formation. When splenectomy was performed under these circumstances, partial to marked clinical improvement occurred because the hemolytic component of the anemia was corrected and/or erythropoiesis was accelerated. The latter provides evidence to indicate that an abnormally functioning spleen may depress the marrow function. It is emphasized that the seven splenectomies performed in this series were done only after extensive study and after increased hemolysis or marrow stimulation by cortisone or corticotropin had been demonstrated. There is no intent to recommend splenectomy routinely in the treatment of chronic bone marrow failure.

Acute Tubular Necrosis.—A correlation of structure and function in acute tubular necrosis, or acute renal failure, has been made, mostly on the basis of the author's microdissections. Functional evidence of a dual cause—ischemia and renal poison—was found; structurally, it was demonstrated that there are two types of lesions in the tubules, tubulorhexic and nephrotoxic. There was focal ischemia in renal poisoning. In the first stage of the disease, the oliguric, or perhaps anuric, phase, certain functional disturbances are associated with certain structural changes in a definite pattern; namely, (1) reduction in renal blood flow and glomerular filtration with empty glomerular capillaries having tufts collapsed but intact; (2) albuminuria with protein in the capsular space; (3) hemoglobinuria with heme pigments in the capsular space and tubule lumens and heme casts; (4) loss of proximal tubule function and inability to concentrate urea and creatinine, to conserve electrolytes, and to extract *p*-aminohippurate with the beginning of tubular damage, that is, the lack of proximal absorption of heme pigments, increasing to tubulorhexic and nephrotoxic necrosis; (5) relative maintenance of glucose Tm with the structural integrity of the first third proximal convolution; and (6) persistence of reduced renal blood flow after initial attack with tubular leakage, interstitial edema and reaction, and increased intrarenal tension. If this early stage does not lead to death from uremia, a diuretic phase occurs as the result of reparative phenomena. The onset of diuresis as a result of absorption of interstitial edema, increasing blood flow, and filtration, with continuing depression of tubular absorption of water, is associated with distended glomerular capillaries and normal appearing tufts and persisting tubular damage, both nephrotoxic and tubulorhexic, with especial involvement of the proximal convolution. Persisting evidence of abolition of the proximal tubule function, that is, inability to concentrate urea in the urine, to conserve electrolytes, and to extract *p*-aminohippurate, relates to the following structural changes: extensive atypical regeneration of renal epithelium—absence of mitochondria and consequent reduced enzymatic content of new renal epithelium—and excess epithelial proliferation and tubular dilatation. When the effects of these reparative processes do not cause death, recovery during the late diuretic stage is gradual over weeks or months of tubular functional ability, with possible eventual clinical recovery; during this time there is a slowly progressive maturation of the regenerated tubular epithelium with ultimate reconstitution of the original structures, including mitochrondrial organelles with their enzymatic content. Renal function after clinical recovery is adequate but remains below the lower limits of normal; this is explained by the loss of some nephrons from irreparable tubulorhexic damage and associated hypertrophy and hyperplasia of others.

American Journal of Psychiatry, New York

110:241-320 (Oct.) 1953

Biological Psychiatry. A. E. Bennett.—p. 244.
Plan for Rehabilitating Improved Psychotic Patients. F. Schnadt.—p. 253.
Importance of Constitution in Psychiatry. G. Langfeldt.—p. 261.
*Level of Achievement After Lobotomy: Study of 1,000 Cases. W. Freeman.—p. 269.
Contribution of Father to Mental Health of Family. L. Bartemeier. —p. 277.
Patterns of Behavior Disturbance Following Cataract Extraction. L. Linn, R. L. Kahn, R. Coles and others.—p. 281.
Effect of Infantile Disease on Ego Patterns. R. R. Grinker.—p. 290.
Geriatric Ward Psychiatry: Techniques in Psychological Management of Elderly Psychotics. R. Ginzberg.—p. 296.

Achievement after Lobotomy.—Most follow-up studies after lobotomy have been performed on patients remaining in the hospital. Freeman feels that tracing patients who have been discharged from the hospital and returned to the community is a proper field of investigation. The present study aims at delineating the patient who has had lobotomy after stabilization. The 622 patients who had Freeman-Watts prefrontal lobotomy were followed for at least 2 years and many of them for more than 10 years or until death. The other main group consisted of 498 patients subjected to transorbital lobotomy and followed for 1 year and most for periods up to 5 years or until death. Of these 1,120 patients, 100 were dropped for various reasons, which left 1,020 for investigation. Personal interviews together with letters from patients and relatives, telephone conversations, and reports from physicians and hospitals were utilized. The data were assembled on worksheets and transferred to punch cards for greater ease in handling. The cards were divided into two groups based on social adjustment at the end of the second year after prefrontal lobotomy and after the first year for transorbital lobotomy. There were 444 with good adjustment and 576 with poor adjustment. Patients who adjusted well at the end of two years after lobotomy (one year after transorbital lobotomy) were employed, partly employed, going to school, keeping house, and otherwise contributing something to the community. Those with poor adjustment were all those in hospital, whether or not they were engaged in some useful occupation, as well as those who remained at home in a dependent condition. The records of the patients were analyzed in an effort to determine the factors responsible for good adjustment. It was found that the level of achievement improved with time. The outstanding feature in a high level of achievement is the short duration of disability. Since community activities and professional competence are possible after lobotomy, it is apparent that the personality downgrading generally attributed to lobotomy should be attributed rather to the devastating effects of the underlying disease process. It is safer to operate than to wait. Transorbital lobotomy yields a higher rate of good social achievement than prefrontal lobotomy, except in hebephrenic schizophrenia.

Am. J. Tropical Medicine & Hygiene, Baltimore

2:757-948 (Sept.) 1953. Partial Index

Vectors and Reservoirs of Virus Diseases. K. F. Meyer.—p. 757.
Studies in Human Malaria. G. R. Coatney, A. V. Myatt, T. Hernandez and others.—p. 777.
Treatment of Malaria with Oral or Intravenous Plaquenil: Preliminary Report. M. T. Hoekenga.—p. 805.
Chloroquine and Chlorguanide as Suppressants of Malaria in Guatemala. C. G. Dobrovolny, W. C. White and G. R. Coatney.—p. 808.
Case of Visceral Leishmaniasis in Saudi Arabia. M. L. Tarizzo, H. A. Bracken and D. J. Strait.—p. 846.
Naturally Acquired Yellow Fever in Wild Monkeys of Costa Rica. O. Vargas-Mendez and N. W. Elton.—p. 850.
Influence of Previous Infection of Mice with *Schistosoma Mansoni* on Challenging Infection with Homologous Parasite. M. A. Stirewalt. —p. 867.
Histopathology of Experimental Schistosomiasis: II. Bisexual Infections with S. Mansoni, S. Japonicum and S. Haematobium. H. E. Meleney, J. H. Sandground, D. V. Moore and others.—p. 883.
Infection of Anopheles Quadrimaculatus, Human Malaria Vector, with Plasmodium Cathemerium, an Avian Malaria Parasite. D. W. Micks and V. McCollum.—p. 930.

Annals Otol., Rhin. and Laryngology, St. Louis

62:607-922 (Sept.) 1953. Partial Index

*Some Remarks About Dizziness—Its Diagnostic Significance and Treatment. W. J. McNally.—p. 607.
Hereditary Hemorrhagic Telangiectasia. D. A. Dolowitz, O. N. Rambo Jr. and F. E. Stephens.—p. 642.
Tuberculosis of Oral Cavity. S. G. Castigliano and E. Shigeoka.—p. 662.
Eight Syndromes of Facial Paralysis and Their Significance in Locating the Lesion. K. Tschiassny.—p. 677.
Pharyngeal Pulsion Diverticulum (Transverse Approach). S. L. Perzik. —p. 699.
New Test for Cochlear Reserve in Selection of Patients for Fenestration Surgery. J. F. Jerger.—p. 724.
Experimental Observations on Sound Conduction in Middle and Inner Ear. H. G. Kobrak.—p. 748.
Tectorial Membrane in Theory of Hearing: Significance of Insertion of Tectorial Membrane in Transmission of Sound Vibrations to Hair Cells and Theory of Mechanism of Tone Location in Cochlea. A. C. Hilding. —p. 757.
Epiphrenic Esophageal Diverticulum. F. J. Putney and L. H. Clerf. —p. 803.
Grasses and Cedar Twigs as Foreign Bodies in Bronchi and Lungs of Children. P. L. Mahoney.—p. 818.
Rational Use of Endoscopy in Surgery. F. F. Boyce.—p. 838.
Changing Concept of Tuberculous Tracheobronchitis. J. J. O'Keefe. —p. 848.
Bronchologist's Experiences with Infectious Asthma. F. W. Davison. —p. 859.
Amyloid Tumors of Lower Part of Respiratory Tract and Mediastinum. H. W. Schmidt, J. R. McDonald and O. T. Clagett.—p. 880.

Diagnosis and Treatment of Dizziness.—McNally points out that most writers use the words dizziness or vertigo interchangeably. If a patient complains of dizziness, one must first exclude the possibility that it is a warning sign of imminent labyrinthine invasion in the course of suppurative middle ear disease, either quiescent or active. Fistula and other vestibular tests should be performed at once. Next, evidence should be sought for serious general organic disease, such as cardiovascular or central nervous system lesions that were found in 35% of a consecutive series of 200 cases of dizziness. True Ménière's syndrome or labyrinthine hydrops will be the diagnosis in about 30% of the cases. The remaining 35% of the cases, those in which the dizziness is not associated with cochlear signs or symptoms, are still difficult diagnostic problems and can best be grouped as atypical or pseudo-Ménière's syndrome, constant watch being kept for other diagnostic signs. The treatment of dizziness is still, for the most part, symptomatic. A patient with Ménière's syndrome should be given a thorough trial of medical treatment before surgery is contemplated. Hyosine and its compounds have proved to be among the most effective labyrinthine sedatives. Antihistaminic preparations have been helpful presumably because of their sedative properties. Because of a prevalent theory that labyrinthine hydrops is the result of vascular spasm, vasodilator drugs play an important role in treatment. Nicotinic acid and histamine are the two in commonest use. The operation of choice for Ménière's syndrome, when the disease is unilateral, is labyrinthine ablation. If the disease is bilateral, a differential section of the vestibular portions of both eighth nerves should be considered in the hope of preserving some of the residual hearing.

Blood, New York

8:867-964 (Oct.) 1953

*Oral Treatment of Pernicious Anemia with Small Doses of Vitamin B_{12} Combined with Mucinous Materials Derived from Hog Stomach. G. B. J. Glass and L. J. Boyd.—p. 867.
Quantitative Studies of Influence of Plasma Proteins and Hematocrit on Erythrocyte Sedimentation Rate. A. J. Meyers, V. Trevorrow, A. H. Washburn and E. R. Mugrage.—p. 893.
Microspectrophotometric Estimation of Desoxyribonucleic Acid (DNA) Content of Individual Normal and Leukemic Human Lymphocytes. N. L. Petrakis.—p. 905.
Demonstration of Cytoplasmic Structure in Plasma Cells. H. Braunsteiner, K. Fellinger and F. Pakesch.—p. 916.
Cyclic Neutropenia with Giant Follicular Lymphoblastoma and Lymphosarcoma: Report of Case with Splenectomy. R. P. Natelson.—p. 923.
Coexistent Chronic Lymphatic Leukemia and Polycythemia Vera: Morphologic and Clinical Studies with Particular Reference to Unusual Iron Metabolism. W. F. Bethard, M. H. Block and M. Robson.—p. 934.
Violet Light Microscope: Method for Visual Estimation of Heme in Living Cells. M. H. F. Wilkins and S. de Carvalho.—p. 944.
Factor VII (SPCA): Its Physiopathologic Significance. P. de Nicola. —p 947.

Oral Treatment of Pernicious Anemia.—Small oral doses of vitamin B_{12} combined with intrinsic factor containing mucinous materials processed from the hog stomach were given under rigidly controlled conditions to 20 patients with pernicious anemia. In 14 patients, the following sources of intrinsic factor from animal stomach were used (*a*) commercial gastric mucin powder, (*b*) acetic acid extracts of hog pyloric mucosa, (*c*) mucinous materials precipitated by acetone or by saturation with ammonium sulfate from hydrochloric acid extracts of the hog pyloric mucosa, or (*d*) mucous fractions obtained by further fractionation in the electroconvection apparatus of the previous mucinous materials precipitated with ammonium sulfate. Results obtained in these patients indicated the feasibility of attaining complete clinical remission and suboptimal or optimal hematopoietic responses in patients with pernicious anemia in relapse when doses below 20 mcg. of vitamin B_{12} are given orally in combination with mucinous materials processed by various techniques from the hog stomach and containing intrinsic factor. The provisions are that: (1) the doses of both vitamin B_{12} and intrinsic factor containing materials must be adequate and optimal in regard to their mutual ratio; and (2) the process involved in processing materials containing intrinsic factor does not impair their activity but yields a product sufficiently concentrated. Although at present some such extracts are active orally in such small doses, from 40 to 50 mg. per day, still further refinement appears possible. Six patients were given vitamin B_{12} with an intrinsic factor concentrate from the hog stomach (Bifacton). The hematopoietic responses and clinical remissions obtained in these six patients who received vitamin B_{12} with intrinsic factor concentrate in different batches were uniform in the authors' hands. The doses employed were marginal in order to detect differences in potency, and, although the reticulocyte responses were frequently suboptimal and protracted, the increases in red blood cells were roughly equivalent to those obtained with daily administration of approximately 1 unit of a standard oral antianemic preparation. The vitamin preparation is supplied in strikingly smaller dosages than the standard liver or stomach preparation for oral use and is fully active in a total daily oral dose of about 50 mg. of intrinsic factor concentrate with 15 mcg. of vitamin B_{12}. Preliminary studies on two of the six patients tend to indicate that the administration of massive single oral doses of the drug repeated at intervals of one week may imitate even more closely the results of parenteral treatment with injectable liver concentrates or vitamin B_{12} than does the administration of this concentrate in small daily doses. The single dose of vitamin B_{12} with intrinsic factor concentrate, which was given once a week to one of these patients, contained 150 mcg. of vitamin B_{12} with approximately 250 mg. of intrinsic factor concentrate. Five consecutive single doses administered at intervals of from 7 to 10 days induced a complete clinical and hematological remission. The studies also indicated that the drug is resistant to boiling and that it maintains its hematopoietic activity after being boiled in water from 30 to 45 minutes at 95 to 100 C. This suggests either that the intrinsic factor of the animal stomach becomes thermostable after the interaction in vitro with vitamin B_{12} or that the product of this binding is thermostable under conditions described.

Delaware State Medical Journal, Wilmington

25:245-278 (Sept.) 1953

Review of Cancer Control Program in Delaware. G. F. Campana.—p. 247.
Mortality from Respiratory Cancer, 1952. C. A. Marshall.—p. 252.
Nursing in Delaware Chest X-Ray Survey. L. G. Riley.—p. 254.
Typhoid Fever and Raw Milk. W. H. Bandy.—p. 255.
Infectious Hepatitis in Rural Community: Report of Mild Outbreak. E. F. Gliwa.—p. 258.

Gastroenterology, Baltimore

25:1-112 (Sept.) 1953

Studies in Chronic Amebiasis: I. Clinical Syndrome. R. A. Radke.—p. 1.
Id.: II. Evaluation of Treatment Technics. R. A. Radke.—p. 9.
Studies on Blood Serum Proteolytic Enzyme with Particular Reference to Gastric Secretory Function. A. B. Chinn.—p. 14.
Effect of New Quaternary Ammonium Compound on Gastric Secretion and Gastrointestinal Motility. R. A. Roback and J. M. Beal.—p. 24.
Improved Gastric Biopsy Tube—Its Manufacture, Use and Investigative Value. C. E. Rubin, M. B. Goldgraber and C. Smith.—p. 31.
*Aureomycin Proctitis and Colitis: Report of Five Cases. A. P. Klotz, W. L. Palmer and J. B. Kirsner.—p. 44.
Failure of Vitamin B_{12} Therapy to Improve Gastric Atrophy in Pernicious Anemia: Report of Case Studied by Serial Gastric Biopsies. E. S. Finckh and I. J. Wood.—p. 48.
*Gastric Neurilemmoma. M. Dorfman.—p. 56.
Fecal Loss of Various Dietary Nutrients in Dogs Lacking Pancreatic Juice. B. J. Cohen and J. H. Annegers.—p. 67.
Perforated Duodenal Ulcer with Neutropenia and Death in Patient Receiving Phenylbutazone Therapy. E. Beutler and D. M. Bergenstal.—p. 72.

Chlortetracycline Proctitis and Colitis.—The occurrence of proctitis and colitis after the administration of chlortetracycline (Aureomycin) is reported in five patients between the ages of 20 and 64 years. Two patients were given chlortetracycline for respiratory infections, one for suspected amebiasis, one for a stitch abscess after ventral hernia repair, and one for dermatitis involving the hands. Healing of the ulcerative lesions of the colon and rectum occurred in four patients after periods of several weeks to months. The disease was so severe in the fifth patient that ileostomy had to be performed as a lifesaving emergency procedure; the mucosa remained inflamed and friable despite the ileostomy and two separate weekly courses of 0.5 gm. of corticotropin. Chlortetracycline thus may cause proctitis and colitis surpassing in importance the original illness for which the antibiotic was prescribed. The incidence probably is greater than has been recognized. The mechanism of the process is not clear.

Gastric Neurilemmoma.—The author reports a case of a gastric neurilemmoma, a specific benign encapsulated nerve sheath tumor, in a 60-year-old man. The patient complained of tarry stools and epigastric pain of one week's duration. He had not had hematemesis but did have weakness and syncope and had lost 10 lb. (4.5 kg.). A large soft tissue mass protruding into the air bubble in the fundus of the stomach was revealed by roentgenologic examination. Exploratory laparotomy revealed a gastric tumor distal to the esophagogastric junction of the greater curvature of the stomach. The main portion of the tumor was outside the wall of the surrounding stomach, and an additional segment of the tumor was observed in the stomach. The tumor had an hourglass configuration. The intragastric portion was ulcerated. Cut section showed the tumor to be friable and to have a somewhat gelatinous mucoid appearance with areas of hemorrhage and some degeneration in the center. Postoperatively, the patient had a psychosis characterized by complete refusal to eat. Despite varied and vigorous therapeutic measures, he followed a downward course and died several months after the operation. Post mortem revealed no other neurogenic tumor in the body. Intra-abdominal neurogenic tumors, such as neurilemmoma, or neurofibroma of the type associated with Recklinghausen's disease, arise mainly from the subserous Auerbach's plexus or in a lesser number from the submucous or Meissner's plexus. There is no consensus regarding the histogenesis. Some workers believe in the Schwannian origin of the tumor, while others consider it to be of mesodermal origin. In contrast to the complex nature of the histogenesis of these tumors, the clinical features are relatively straightforward. The tumors may cause bleeding; they may cause obstruction with epigastric pain, nausea, and vomiting; or they may cause no symptoms. Although the diagnosis of gastric neurilemmoma may be suspected from a careful correlation of the clinical features with the roentgenographic findings, differentiation from other benign gastric tumors may be very difficult or impossible.

Journal of Applied Physiology, Washington, D. C.

6:143-200 (Sept.) 1953

In Vivo Studies of Human Plasmin: Intravenous Injection in Dogs and Rabbits. E. E. Cliffton, D. A. Cannamela and C. Grossi.—p. 143.
Ammonium Chloride Acidosis and Breath Holding. R. C. Stroud.—p. 151.
*Adaptation to High Altitude: Changes in Breath-Holding Time. H. Rahn, H. T. Bahnson, J. F. Muxworthy and J. M. Hagen.—p. 154.
Id.: Respiratory Response to CO_2 and O_2. H. Rahn, R. C. Stroud, S. M. Tenney and J. C. Mithoefer.—p. 158.
Relationship Between Body Composition and Basal Metabolic Rate in Children. S. M. Garn, L. C. Clark Jr. and R. Portray.—p. 163.
Rate of Papaverine Metabolism in Man. S. R. Elek and H. C. Bergman.—p. 168.
Influence of Phosphorylated Hesperidin on Fat Tolerance Curves in Vivo and in Vitro. W. J. Messinger and Y. Porosowska.—p. 173.
Distribution of Visual Threshold. J. C. Peskin.—p. 177.
Mechanical Efficiency in Cycling of Girls 6 to 14 Years of Age. M. E. R. Bal, E. M. Thompson, E. M. McIntosh and others.—p. 185.
Continuous Recording of Blood Oxygen Tensions by Polarography. L. C. Clark Jr., R. Wolf, D. Granger and Z. Taylor.—p. 189.
Antidiuretic Substance in Urine Following Exposure to High Temperatures. K. Hellmann and J. S. Weiner.—p. 194.

Adaptation to High Altitude: Changes in Breath Holding Time.—With a sudden transition from sea level to altitude one can observe that the initially lowered alveolar oxygen pressure slowly increases over the next few days, while the alveolar carbon dioxide pressure falls. This can be explained by a gradual increase in the alveolar ventilation, which reaches a new level at altitude after several days. Thereafter the alveolar gas concentration remains stable and as far as can be judged from the available literature does not differ from that observed in permanent residents of mountain regions. Schneider seems to have been the first to make the interesting observation that the maximal breath holding time was not only reduced initially with the acute exposure to altitude but became increasingly shorter during the next few days of altitude adaptation. It can be shown that with breath holding on air the breaking point is released by a combination of oxygen lack and carbon dioxide excess. Since either of these factors or possibly both seem to be altered during altitude adaptation, it became of interest to repeat similar studies not only after breathing air but also after breathing pure oxygen in order to eliminate the oxygen lack stimulus. Rahn and associates recorded changes in maximal breath holding time as well as the alveolar gas concentrations after breathing air or oxygen in four subjects during a seven day exposure to an altitude of 14,100 ft. (4,300 m.). After the initial exposure to this altitude the breath holding time for air as well as for oxygen was gradually reduced over the next five to seven days. Simultaneously the carbon dioxide differences between the normal resting carbon dioxide level and that obtained at the breaking point were also reduced. These changes are interpreted as indicating an increased sensitivity of the respiratory system to carbon dioxide. The index of breath holding time is suggested as a simple tool in evaluating respiratory adaptation to altitude.

Kansas Medical Society J., Topeka

54:413-452 (Sept.) 1953

Hysterectomy—Clinical Consideration. C. G. Johnson.—p. 413.
Three and a Half Years Experience with Bone Bank. J. F. Lance. —p. 418.
Venereal Disease Epidemiologic Study in Kansas City, Wyandotte County, Kansas. L. G. B. Byington and H. Wettig Jr.—p. 420.

Kentucky State Medical Assn. Journal, Bowling Green

51:425-472 (Oct.) 1953

Diarrhea in Infants and Children. K. P. Crawford.—p. 425.
Current Trends in Anesthesia and Their Relationship to General Practitioner. L. Francis.—p. 429.
Management of Essential Hypertension. W. C. Gettelfinger.—p. 434.
Urethra of Woman. R. Lich Jr.—p. 437.
Shoulder-Hand Syndrome. G. S. Dozier.—p. 441.
Intestinal Obstruction. R. J. Noer.—p. 449.

Louisiana State Medical Society Journal, New Orleans

105:373-414 (Oct.) 1953

Treatment of Acute Respiratory Infections. C. Parnall Jr.—p. 373.
Treatment of Carcinoma of Skin: Preliminary Statistical Review. C. I. Black and H. W. Jolly Jr.—p. 374.
Drug Reactions of Importance in Daily Practice. J. D. Youman Jr. —p. 380.
Aplastic Anemia; Report of Case Following Chloromycetin Therapy and Infectious Hepatitis. W. J. Hollis and L. E. Hanisch.—p. 385.
*Surgical Intervention for Ectopic Pancreas in Pylorus. G. N. Weiss and F. H. Marek.—p. 389.
Prognosis in Hypertension: Evaluation of 300 Consecutive Cases. F. W. Pickell.—p. 393.
*Ochronosis; Report of Case. T. G. Biggs Jr. and E. Cannon Jr.—p. 395.
Recent Advances in Treatment of Hypertension. J. E. Bechtold.—p. 396.
Report of Supplementary Feeding of First Grade Children in Central Louisiana Town. M. C. Moore, E. P. Rooks and I. H. Peters.—p. 400.

Ectopic Pancreas in the Pylorus.—Surgical intervention for ectopic pancreatic tissue in the pylorus was carried out in a 29-year-old man. The patient had had postprandial pains of the "ulcer type," ate little, and had lost 30 lb. (13.6 kg.) in two years. Stools were normal, and there was no constipation or diarrhea. No specific food dyspepsia was noted. The patient did not respond to an ulcer diet with corresponding administration of methantheline (Banthine). Roentgenologic examination of the stomach revealed a disturbed mucosal relief pattern on the greater curvature; there was pronounced coarseness of the mucosal folds of the stomach, with definite mucosal changes with fixation. There was also a deformity of the duodenal bulb. Abdominal exploration revealed a lesion at the pyloric region of the stomach on the greater curvature. The tumefaction was located subserosally; it was lobulated with a grayish-pink appearance and simulated the gross appearance of normal pancreatic tissue. There was no other evidence of gross disease, and a wedge resection of the involved area was done. A pathologist examined a section of the specimen at the time of the intervention and reported the tissue to be aberrant pancreas. A final gross and microscopic description confirmed this diagnosis. The pancreatic tissue was in the subserosa and muscular coats of the stomach wall. The patient made a complete recovery. Ectopic pancreas in the pylorus should be suspected when a patient presents postprandial pain of the ulcer type, weight loss, and failure of response to ulcer management. A normal gastric analysis should lead to a high index of suspicion of diseases other than peptic ulcer despite peptic ulcer symptoms. The roentgenographic diagnosis is most likely that of a tumor or ulcer, but, coupled with the clinical findings and normal gastric analysis, the possibility of aberrant pancreatic tissue should be strongly considered. Surgical intervention, with a frozen section microscopic report at time of surgery, will confirm the diagnosis, and local excision of the involved area will effect a cure.

Ochronosis.—A 45-year-old man with osteoarthritis of the lumbar, thoracic, and cervical spines and knees was hospitalized for a therapeutic trial with corticotropin (ACTH). Routine Benedict's tests for urine sugar consistently gave a black discoloration. The patient's urine turned brownish-black on standing and alkalization, and the addition of ferric chloride gave a grayish precipitate—findings compatible with alkaptonuria. Prior to corticotropin therapy there was an average eosinophil count of 413 over a period of three days. Corticotropin was given in doses of 40 mg. daily for two days, 60 mg. daily for the next two days, and a maximum dose of 80 mg. daily for two more days. Four days after the start of the corticotropin therapy, the eosinophil count dropped to zero and remained at zero for the next three days. Despite adequate adrenal response to corticotropin as evidenced by the sustained reduction in the eosinophil count, the patient experienced no relief from back pain, and the pain in the right knee became exaggerated with the development of effusion. Corticotropin then was discontinued. Following the report of Cope and Kassander (*J. A. M. A.* 150:997 [Nov. 8] 1952) on the use of cortisone in ochronotic arthritis, the patient was given a trial of cortisone; treatment was started with 300 mg. daily, decreasing gradually to a maintenance dose of 50 mg. daily. Prompt and complete relief of pain was observed as well as the usual increased sense of well being. Examination of the urine did not show the usual dark brown discoloration of the urine on alkalization or standing. There was a normal and negative reaction to Benedict's solution, and there were negative results to the ferric chloride test. All the original findings of alkaptonuria recurred as soon as the dose of corticotropin was decreased to 50 mg. daily. Reversal of the alkaptonuric signs depending on the dosage of cortisone is in agreement with the findings of Cope and Kassander.

Medical Annals of District of Columbia, Washington

22:517-580 (Oct.) 1953

Cardiac Arrest with Report of Case Successfully Defibrillated. G. W. Ware.—p. 517.
Treatment of Acute Renal Insufficiency. G. E. Schreiner.—p. 531.
Fluid and Electrolyte Therapy: Physiologic and Clinical Aspects. L. K. Alpert, E. Cotlove and A. E. Parrish.—p. 536.
Dissociative Reactions: Dissociation, Double Personality, Depersonalization, Amnesia, Fugue States, Somnambulism, and Hypnosis. H. P. Laughlin.—p. 541.

Minnesota Medicine, St. Paul

36:1009-1104 (Oct.) 1953

The Physician and His Estate. H. A. Blackmun.—p. 1033.
The Doctor as Medical Witness. R. Scallen.—p. 1036.
Country Newspaperman Wants More "Horse and Buggy" Doctors. A. C. McIntosh.—p. 1039.
Problem of Lupus Erythematosus. H. E. Michelson.—p. 1043.
Red Sore Eye Emergency Care. M. A. McCannel.—p. 1046.
*Quinidine Intoxication Occurring During Therapy of Auricular Arrhythmias. R. Berman, C. M. Sadoff and G. B. Gordon.—p. 1052.
The Medical Technologist and the University of Minnesota. W. W. Spink.—p. 1061.
Practical Considerations in Cervical Cytology. D. C. Dahlin.—p. 1065.

Quinidine Intoxication During Therapy of Auricular Arrhythmias.—Complications arising in the course of quinidine therapy for auricular arrhythmia are described in three women and two men. Administration of quinidine in two patients with mitral stenosis was attempted with a total dose of 1.6 to 2 gm. for regulation of auricular fibrillation. Short runs of ventricular tachycardia resulted in one patient, while the other collapsed with apparent cardiac and respiratory failure but revived after artificial respiration. The third patient had diffuse myocardial fibrosis without myocardial hypertrophy. Auricular fibrillation was regulated with a total dose of 3.8 gm. of quinidine. The restoration of sinus rhythm was followed by convulsions and later by cardiac arrest. The patient remained in coma for 19 days after electrical stimulation of the heart and died. The fourth patient had myocardial hypertrophy of undetermined cause with some fibrosis. After an unsuccessful attempt at regulation of auricular fibrillation with a total dose of 3.2 gm. of quinidine, apnea occurred, and the patient was found in a convulsive state, cyanotic and pulseless. A second attempt resulted in return to sinus rhythm and another convulsive episode similar to the first, and fibrillation recurred. The patient was again given quinidine; this resulted in intractable tachycardia and death. Failure to appreciate the syndrome of convulsion and apparent death as a toxic manifestation of quinidine led twice to unwarranted resumption of quinidine therapy. The fifth patient had auricular flutter with hypertension. Administration of a "test" dose of 0.4 gm. of quinidine was followed by severe nausea and vomiting, respiratory failure, and many convulsions. During the seizure, the flutter changed to fibrillation with subsequent reversion to flutter. Recovery followed artificial respiration. Thus four of the five patients displayed acute cardiorespiratory collapse that was fatal in two. The similar symptoms in these cases can be classified as quinidine shock, characterized by convulsions, respiratory failure, cardiac collapse, absent blood pressure, lack of pulse. It may be of brief duration and may respond to artificial respiration. The syndrome resembles the effect of cerebral embolism. Necropsies were performed in the two fatal cases, but emboli were not found. It is likely that the reactions following quinidine regulation of fibrillation interpreted in the past as cerebral emboli often represented in reality the quinidine intoxication syndrome occurring shortly after regulation. General recognition of the possibilities of these serious reactions to quinidine should result in more cautious selection of fibrillators for regulation and more vigilant methods of exhibition of the drug, using an initial dose of 0.2 gm. of quinidine on the first day, increased by increments of 0.2 gm. daily to a maximum of 2 gm. in any single day. Artificial respiration is a useful measure that is occasionally lifesaving when apnea follows the administration of quinidine.

Nebraska State Medical Journal, Lincoln

38:353-384 (Oct.) 1953

Significance of Multiple Injuries in Relation to Surgery of Trauma. C. Mathewson Jr.—p. 356.
Surgical Treatment of Pancreatic Disorders. J. M. Waugh.—p. 361.
Liver in Heart Disease. H. J. Zimmerman.—p. 367.
Surgical Indications and Treatment of Mitral Stenosis. H. H. McCarthy. —p. 371.
Control of Secondary Hemorrhage Following Tonsillectomy. J. C. Davis. —p. 373.

New York State Journal of Medicine, New York

53:2015-2142 (Sept. 15) 1953

Bullous Dermatoses: Diagnoses, Classification, and Treatment. M. J. Costello.—p. 2075.
Antibiotic Drug Eruptions. J. T. Crissey and C. W. Caccamise.—p. 2085.
Industrial Dermatoses Associated with Neurodermatitis. A. Brodey. —p. 2089.
Hirsutism Due to Masculinovoblastoma. J. J. Hallett and J. W. Holler. —p. 2095.
Care of Plantar Wart. H. H. Bauckus.—p. 2098.
Resection of Left Auricular Appendage for Recurrent Arterial Embolization. R. A. Nabatoff, B. Richman and L. M. Rivkin.—p. 2103.
Biliary Tract Visualization with Telepaque: Results in 100 Patients. Z. T. Bercovitz, L. Gillette and S. White.—p. 2108.

Ohio State Medical Journal, Columbus

49:861-956 (Oct.) 1953

*Joint Stabilization Through Induced Ligament Sclerosis. G. S. Hackett. —p. 877.
Use of Buthoids® (Butaphyllamine® Suppositories) as Adjuncts in Treatment of Cardiovascular Disease. D. P. Osborn.—p. 885.
Progress in Study of Hodgkin's Disease. A. Rottino.—p. 868.
Present Day Lag in Treatment of Tuberculosis. R. H. Browning.—p. 891.
What to Do About Strasbismus. F. D. Costenbader.—p. 892.

Induced Sclerosis of Ligaments in Joint Stabilization.—Hackett believes that relaxation of the sacroiliac articulation, particularly of the posterior sacroiliac ligament, is an important factor in low-back pain. Functional relaxation of the posterior sacroiliac ligament occurs during pregnancy, whereas pathological relaxation results from strains, sprains, and tearing of fibers that may occur in two ways: (1) through a single, specific trauma incidental to the strain of an unaccustomed task, and (2) as the result of an occupation that requires a great deal of lifting, twisting strain in a stooped position, such as that of a housewife, farmer, an athlete, or an industrial worker. Case reports illustrate the different causes. The pain accompanying relaxation of the sacroiliac ligament may be continuous or recurrent and is susceptible to acute aggravation. It may be aching in character, or it may be severe and knife-like when movement is attempted. Many patients endure the pain for years, learning to live within its restrictions. The author describes his method of determining the seat of pain, point of tenderness, and the area of referred pain. He confirms the diagnosis by the injection of a local anesthetic into the ligament, which should abolish or relieve the pain. Roentgenograms are usually of no value in determining relaxation of the posterior sacroiliac ligament but are valuable in determining congenital or acquired deformities or bone lesions. As regards treatment, the author puts particular emphasis on the stabilization of the joint by sclerotherapy. The patient lies relaxed and face down. The site of injection may be beneath the posterior superior spine of the ilium or within 1.5 in. (3.81 cm.) above or below. A 24 gage needle 1.5 in. long or a 23 gage needle 2.5 in. (6.35 cm.) long (depending on the size of the patient) is attached to a syringe containing 3 to 5 cc. of a long-acting local anesthetic. It is inserted through the skin at a point 0.5 in. (1.27 cm.) lateral to the midline at an angle of 45 degrees. The anesthetic is slowly injected ahead of the needle until the needle has been inserted its full length. While the needle remains in place, the syringe is replaced by one containing 0.5 cc. of the sclerosing solution that is then injected into the ligament, not into the muscle or subcutaneous tissue, as the needle is withdrawn. The proliferation of fibrous tissue, which takes place in the connective tissue septums between the bundles and fibers of the ligament, will strengthen the ligament and inhibit the abnormal movement of the joint. The author has used this method for the past 14 years in 253 patients. Relief of symptoms ranging up to 14 years has been attained in 82% of the cases. No unfavorable incident occurred.

South Dakota J. Med. & Pharmacy, Sioux Falls

6:257-280 (Sept.) 1953

Contribution to Hepatitis Problem. R. W. Roesel.—p. 257.
Attempts at Isolating Influenza Virus in Two Southeastern South Dakota Cities During Recent Influenza Epidemic. E. C. Pirtle.—p. 261.

Southwestern Medicine, El Paso, Texas

34:305-344 (Sept.) 1953. **Partial Index**

Massive Gastro-Intestinal Hemorrhage. J. J. Gorman.—p. 327.
Bilateral Parovarian Cysts with Torsion of Pedicle of Right Parovarian Cyst: Report of Case. L. Manoil.—p. 330.

34:345-388 (Oct.) 1953

Comments on Treatment of Reptile Poisoning in the Southwest. F. A. Shannon.—p. 367.
Recurrent Implantation Cysts of Ovary. A. H. Follingstad.—p. 374.

34:389-432 (Nov.) 1953

Gout. R. D. Haines.—p. 409.
Bentyl Hydrochloride or Dicyclomine Effective in Relieving Angina Pectoris. R. J. Antos.—p. 413.
Bone Coccidioidomycosis: Case Report—Cured by Surgery. H. E. Hipps. —p. 416.

Texas State Journal of Medicine, Fort Worth

49:735-790 (Oct.) 1953

Glucose in Development and Treatment of Diabetic Acidosis. D. W. Seldin.—p. 738.
Diabetes in Children: Some Practical and Theoretical Considerations in Management. J. W. Sherrill.—p. 743.
Experiences with Vitallium Intramedullary Hip Prosthesis. F. R. Thompson.—p. 749.
Chronic or Periodic Headache. H. Ford and I. Schuleman.—p. 757.
Treatment of Urinary Infections: Choice of Drug. G. Carroll.—p. 761.
Lower Nephron Nephrosis: Emphasis on Conservative Treatment. S. B. Lindsey, R. D. Haines and V. J. Simmon.—p. 765.
Bilateral Renal Cortical Necrosis in Child Associated with an Incompatible Blood Transfusion. G. H. Wahle Jr. and E. E. Muirhead. —p. 770.

FOREIGN

Annals of Rheumatic Diseases, London

12:177-260 (Sept.) 1953

Natural History of Arthritis Following Venereal Urethritis. D. K. Ford. —p. 177.
Choice of Operation in Chronic Arthritis of Hip. W. D. Coltart.—p. 198.
Sources of Error in Erythrocyte Sedimentation Rate. J. S. Lawrence. —p. 206.
*Association of Sjögren's and Felty's Syndromes. K. J. Gurling.—p. 212.
Recovery from Structural Changes Produced in Adrenal Glands of Rat by Administration of Cortisone. M. B Patterson, H. S. Siegel and R. H. Freyberg.—p. 217.
*Dyspeptic Backache. J. W. Beattie.—p. 223.
Effect of Pregnancy on Onset and Course of Rheumatoid Arthritis. M. Oka.—p. 227.
Morbidity of Rheumatoid Arthritis. F. Ammitzbøl and E. Snorrason. —p. 230.

Association of Sjögren's and Felty's Syndromes.—Gurling presents observations on two patients in whom Sjögren's and Felty's syndromes were combined. Although attention has not previously been drawn to the association of these two syndromes, the author feels that the presence of certain features of both syndromes in these two patients suggests that they have a common pathological basis. They are unusual variants of rheumatoid arthritis, and, of the two, Felty's syndrome is less frequently encountered than Sjögren's, the incidence of which Stenstam in 1947 found to be 9.5% in 495 arthritic patients. Several cases of Sjögren's syndrome have been reported in which the white blood cell count is low, but only Ytrehus in 1946 mentioned the occurrence of keratoconjunctivitis sicca in Felty's syndrome. Examples of Sjögren's syndrome with splenomegaly or leukopenia have been reported by several observers. The author regards it as probable that both these syndromes are associated with a similar disturbance of collagen and reticuloendothelial tissues and that if the spleen is enlarged there is added the picture of hypersplenism mainly affecting the white blood cells. A small proportion of patients with Sjögren's syndrome may, therefore, have leukopenia if the spleen is enlarged, just as a few of those exhibiting Felty's syndrome may have keratoconjunctivitis and xerostomia.

Backache in Dyspepsia.—It is well known that backache occurs in spinal disorders involving the skeletal structures. It is also recognized as a feature of gynecologic disorders, organic nervous diseases, and states of anxiety and hysteria. Much less appreciated is the fact that backache may be caused by various intra-abdominal lesions. The first description of this association is attributed to Cruveilhier who in 1829 observed that "Many patients complain more of a spinal point than of an epigastric point of tenderness." Beattie shows that the association of backache with dyspepsia is often overlooked. He presents histories of four patients in whom backache was the predominant or an additional feature in the presence of gastrointestinal ulceration or neoplasm. A conversation with a fifth patient with duodenal ulcer dyspepsia elicited the information that during a bout of severe indigestion the pain in his back was considerably severer than his epigastric discomfort. Other cases have been seen in which backache occurred with epigastric discomfort and pain. This back pain was as troublesome as the indigestion, and sometimes worse. In some cases epigastric pain radiated through to the back. Strict attention to a peptic ulcer regimen produced alleviation of both symptoms. The importance of the symptom of backache in gastrointestinal diseases and the mechanism of production of this symptom are discussed.

British Journal of Dermatology, London

65:337-388 (Oct.) 1953. **Partial Index**

Studies on Case of Porphyria Cutanea Tarda. G. C. Wells and C. Rimington.—p. 337.
Cutaneous Manifestations of Porphyria: South African Cases. R. Lang and J. Walker.—p. 352.
Chronic Familial Porphyria, with Associated Changes in Long Bones. J. H. S. Pettit and F. G. Anderson.—p. 356.

British Journal of Radiology, London

26:497-552 (Oct.) 1953

Closure of Larynx. G. M. Ardran, F. H. Kemp and L. Manen.—p. 497.
Radiography of Larynx in Postero-Anterior Projection. G. M. Ardran and F. H. Kemp.—p. 509.
Pulmonary Interstitial Emphysema. G. Herrnheiser and J. P. Whitehead. —p. 519.
Cobalt 60 Telecurie Unit. M. Lederman and C. A. Greatorex.—p. 525.
Acrocephalosyndactyly with Report of Case. R. Cooper.—p. 533.
Preliminary Report on Sodium Acetrizoate as Contrast Medium in Intravenous Urography. P. Cave, G. A. Burfield and J. A. Rankin. —p. 548.
Experimental Radiotherapy of Abdominal Cancer: III. Increased Systemic Tolerance with Field-Fractionation (Sieves). L. Cohen and A. Cohen. —p. 551.

British Medical Journal, London

2:841-896 (Oct. 17) 1953

*Chronic Gastric Ulcer: Comparison Between Gastroscopically Controlled Series Treated Medically and Series Treated by Surgery. B. F. Swynnerton and N. C. Tanner.—p. 841.
Cancer and Community. P. Stocks.—p. 847.
Cancer and Community. R. W. Raven.—p. 850.
Modified Course of T. Congolense Infection in Mice Given Diets with Milk Casein. A. A. N. Keppie.—p. 853..
Histoplasmosis in Great Britain: Description of Second Case of Disseminated Histoplasmosis: Treatment by Ethyl Vanillate. S. Locket, E. A. Atkinson and W. S. M. Grieve.—p. 857.
Mechanism of Syncope After Coughing. E. P. Sharpey-Schafer.—p. 860.
Effects on Blood Pressure of Ventricular Asystole During Stokes-Adams Attacks and Acetylcholine Injections. E. D. Barlow and S. Howarth. —p. 863.
Hiatus Hernia and Pregnancy: Review of Nine Cases and Literature. W. A. W. Dutton and H. J. Bland.—p. 864.
*Treatment of Tetanus. J. H. McIntyre.—p. 866.

Chronic Gastric Ulcer.—Of 498 patients with chronic gastric ulcer admitted to the St. James's hospital in London between 1940 and 1946, 262 were treated medically and 254 surgically; 18 were in both groups. Of the 498 patients, 387 were men and 111 were women, a ratio of 3.5 to 1. Nearly all of the patients were followed up for from 5 to 12 years. The criterion for the inclusion of the patients in the authors' study was the presence of an active chronic gastric ulcer that must have been gastroscopically confirmed in the group receiving medical treatment. An analysis of the case records of the patients showed that the symptoms may start at any age, most commonly after 30, the average age being 44. The average age at the time of the operation in those surgically treated was in the fifties. The sites of gastric ulcers differed greatly between men and women. In women the site of predilection was the high posterior aspect of the lesser curvature, while ulcers in the pyloric antrum were exceptional. In men the distribution along the lesser curvature was more even, with a maximum incidence in the mid and lower body, while 10% were situated distal to the angulus. Results of a fractional test meal, using gruel as the stimulant, were available in 342 patients. The age of the patient influenced the level of acidity to only a slight extent; the presence of a degenerate mucosa rather than the age of the patient accounted for the findings. Sixty-one patients in the group receiving medical treatment and 56 in that receiving surgical treatment subsequently died. There was no predominant cause of death. Considering the problem of the malignant degeneration of chronic gastric ulcers, there was not enough evidence to apply the term "ulcer-cancers" to the condition in any of those patients in whom gastric carcinoma later developed. It is concluded that if an association between gastric ulcer and gastric carcinoma exists, it is due to a preference of both for the same type of degenerate mucosa. Hematemesis or melena occurred in 139 (28%) of the 498 patients during the course of their ulcer histories; in 22 (16%) of the 139 there was more than one episode of bleeding. Results obtained by medical treatment suggested that, although treatment will nearly always heal the ulcer, it will keep it healed in only 25% of the milder or earlier cases. In 75% of the patients the symptoms of gastric ulcers recurred. Patients less than 50 years of age had a higher incidence of recurrences than those aged over 60, no matter what the length of history. This may be because those patients whose ulcers recur frequently are operated on before reaching an advanced age. In the group treated surgically, very satisfactory results were obtained in 80%, moderate in 10%, and poor in the remaining 10%. It is concluded that surgical intervention at present offers the best results, but before it is advocated certain factors, including local operative mortality figures, the severity and length of history of symptoms, and the presence of intercurrent disease, should be taken into account.

Treatment of Tetanus.—A 4-year-old girl and a 7-year-old boy with severe tetanus in whom the periods between injury and onset of symptoms were four and six days, i. e., less than one week, died despite treatment with gallamine triethiodide, thiopental sodium, antitoxin, and antibiotics. Death occurred within three days in the girl and within 24 hours in the boy. Gallamine triethiodide was given in doses varying from 5 mg. intravenously to 20 mg. intramuscularly. The girl received a total dose of 180 mg. intramuscularly and 170 mg. intravenously, and the boy received 404 mg. intravenously. The author had the impression that gallamine triethiodide caused some respiratory embarrassment in the girl, but this was not confirmed in the boy, who was, however, desperately ill on admission. Penicillin, even in doses of 1,000,000 units given every four hours, and antitoxin serum in doses of 80,000 units in the first 12 hours had little effect. The present methods of treatment of tetanus in cases occurring within a week of injury are ineffective. Routine active immunization of all children against tetanus is recommended.

Canadian Journal of Medical Sciences, Ottawa

31:367-436 (Oct.) 1953. Partial Index

Slide Culture of Tubercle Bacilli: I. Media and Methods. R. W. Reed. —p. 367.
Rat Serum Amylase: I. Studies in Normal and Alloxan Diabetic Animal. J. Tuba and G. S. Wiberg.—p. 377.
Method for Determination of Effects of Drugs on Pain Threshold of Human Subjects. G. A. Deneau, R. A. Waud and C. W. Gowdey. —p. 387.
Statistical Methods in Medical Research: II. Sample Sizes Required in Experiments Involving All-or-None Responses. D. Mainland and M. I. Sutcliffe.—p. 406.
*Prevention of Liver Necrosis by Alpha-Tocopherol, Methionine, and Cysteine by Oral and Parenteral Routes. J. R. McLean and J. M. R. Beveridge.—p. 417.
Incidence of E. Coli Group 0111 in Sporadic Infantile Gastroenteritis and Sensitivity to Antibiotics of Strains Isolated. N. A. Hinton, J. E. Nelles and G. B. Reed.—p. 431.

Prevention of Liver Necrosis.—According to McLean and Beveridge a number of investigators have substantiated the fact that when young rats are fed certain diets low in the sulfur-containing amino acids, methionine and cystine, and in alpha-tocopherol, they succumb within a few weeks to acute hepatic damage. After reviewing the literature on this problem, the authors point out that the wide dissimilarity in molecular structure of alpha-tocopherol and the sulfur-containing amino acids, methionine and cystine, and the fact that these compounds exert a similar prophylactic action in the prevention of acute liver necrosis has led to much speculation on the relationship between them and on their mode of action. It is possible that these compounds are required at different points in a metabolic process. The possibility also exists that one of these substances might act exclusively in the intestinal tract and another in some part of the body after absorption. The feasibility of testing this thesis by the administration of these compounds by mouth and by injection seemed reasonable. Furthermore, such an experiment might throw light on the intestinal toxin theory. Seventy male rats of the Sprague-Dawley strain were divided into groups of 10. These groups were fed a basal necrogenic diet supplemented with alpha-tocopherol, DL-methionine, and L-cysteine. The amount of supplement contained in the daily ration was administered parenterally to similar groups of rats. All three antinecrogenic agents employed exerted some action when given either in the diet or by injection. Alpha-tocopherol given by both routes completely prevented the development of liver necrosis. On an equisulfur basis, methionine was obviously more effective than cysteine by either method of administration. The experiment did not answer the question of the site of action of these compounds. The low antinecrogenic potency of cysteine compared to methionine or to cystine poses a problem yet to be explained.

Die Medizinische, Stuttgart

No. 42:1349-1380 (Oct. 17) 1953. Partial Index

Tumors of the Bladder and Their Treatment. H. Schneider.—p. 1349.
*Therapeutic Sleep with Phenothiazine Derivatives (Atosil and Megaphen). M. Ratschow.—p. 1351.
Clinical Importance of Differentiated Determination of Prothrombin and Accelerators of Blood Coagulation. H. E. Schultze and G. Schwick. —p. 1354.
Subclinical Types of Thiamine (Vitamin B_1) Deficiency. P. J. Bandmann. —p. 1357.

Therapeutic Sleep with Phenothiazine Derivatives.—A proprietary preparation of N-dimethylaminopropyl phenothiazine (Phenergan) called Atosil, and Megaphen another proprietary phenothiazine derivative of even greater potency were used in combination for inducing continued therapeutic sleep (so-called artificial hibernation) for 72 hours in adult patients with cardiac infarction, pain associated with acute arterial thrombosis, pain associated with gastroduodenal ulcers, circulatory decompensation, and toxic diffuse goiter and in children undergoing tonsillectomy. Both drugs were available in ampuls of 2 cubic centimeters containing 50 mg. of the hydrochloride acid salt, and in 25 mg. tablets. Sleep was first induced with intravenous administration of 2 ampuls of either one of the two preparations diluted with sodium chloride or polyvinylpyrrolidone (Periston). Phenergan in doses of 50 mg. then was given intramuscularly every eight hours, and in addition 25 mg. of Megaphen were given for the night. In very restless patients, this basic dose had to be increased to 400 or 500 mg. Oral therapy in general was not sufficient to induce therapeutic sleep, but was used as a somewhat stronger sedative during the day; one tablet of Phenergan was given three times during the day and two tablets of Megaphen for the night. Children were given one-half or one-third of the adult doses. Independent of the patient's disease, observations were made as follows: The hypnotic effect of the drugs became manifest between 10 and 20 minutes after the parenteral administration and between 30 and 45 minutes after the oral administration. There was a slight increase in pulse rate, which was restored to normal after about 90 minutes, and a slight lowering of the systolic blood pressure. Respiration was deep and regular. Diuresis was increased, and patients with circulatory disturbances excreted occasionally four to five liters within 24 hours. Defecation did not occur spontaneously and enemas were required daily to evacuate large amounts of stool. The basal metabolic rate was reduced by 20% during the therapeutic sleep. The hypnotic effect of the drugs was most pronounced during the first 24 hours, and in order to maintain it at the same level an increase of the single doses of the drugs by 25 mg. seems advisable on the second and third day. The patients could be awakened easily at any time, but were not given food. The therapeutic sleep thus was combined with a fasting cure, but the intake of 1,000 cc. of fluid, preferably fruit juice, seemed appropriate. The skin temperature, particularly that of the feet, was reduced by 4 to 5 degrees, and there was a considerable drop in body temperature to 35 C (95 F) and even less. Defensive reactions to cold, such as slight chills or cutis anserina, occurred rarely but were considered as warning signs to discontinue the sleep. Most of the 25 patients with cardiac infarction were free of complaints after three days of therapeutic sleep. In patients with pain from acute arterial thrombosis, therapeutic sleep made possible intra-arterial insufflation of oxygen, intra-arterial injections of procaine hydrochloride and of 2-benzyl-2-imidazoline hydrochloride (Priscol) without restlessness of the patient. Perfusion thus could be restored and extremities could be saved, even in cases with an unfavorable prognosis. Treatment by diet and bed rest of patients with painful duodenal ulcers was definitely shortened after 72 hours of therapeutic sleep. Considerable relief was obtained by early diuresis and evacuation of particularly large amounts of feces resulting from three days therapeutic sleep in 15 patients with cardiac decompensation. Severe phenomena of excitation and threatened coma were controlled by three to four days therapeutic sleep in five patients with diffuse toxic goiter. Local anesthesia could be reduced to a minimum and administration of analgesics was not required in children in whom tonsillectomies were performed during therapeutic sleep induced with Phenergan. Undesirable side-effects were hardly observed except for a feeling of restlessness in the legs, due to peripheral hypoxemia, and excitation in alcoholic patients and in patients with cerebral sclerosis; these untoward reactions subsided within 50 to 60 minutes and successive sleep was particularly deep.

Edinburgh Medical Journal

60:409-436 (Oct.) 1953

Some Observations on Congenital Infantile Hypertrophic Pyloric Stenosis. D. N. Nicholson.—p. 409.
Gilles de la Tourette's Syndrome. W. P. Mazur.—p. 427.

Geburtshilfe und Frauenheilkunde, Stuttgart

13:765-860 (Sept.) 1953. **Partial Index**

Importance of Cation Exchange Resins in Obstetrics. H. P. Wolff. —p. 765.
Cesarian Section: Indications as Regard the Infant. H. Noack.—p. 778.
Placenta Praevia and Cesarian Section. H. Hosemann and E. Halfpap. —p. 786.
Cancer Prophylaxis: Experiences and Results of a Cancer Prevention Clinic from 1948 to 1952. Suggestions for Removal of Organizational Defects. H. Bowien.—p. 796.
Demonstration of Liver Antibodies in Pregnancy Toxicosis. H. E. Levens and O. Prokop.—p. 828.
*Treatment of Hyperemesis Gravidarum. G. Hartlieb.—p. 836.
Radiocobalt in Treatment of Climacteric Hemorrhages. J. Gosch.—p. 841.

Treatment of Hyperemesis Gravidarum.—According to Hartlieb hyperemesis gravidarum is the result of accumulations of abnormal metabolic products in the blood of pregnant women. He believes that the assumption that psychic factors are mostly responsible for this disorder has been largely disproved. In fatal cases of hyperemesis gravidarum, the main changes are found in the liver, which presents the picture of toxic degeneration. In the acini, particularly in the cells near the center, fatty degeneration is found, and in many cases the liver changes resemble those of atrophy of the liver. The "antitoxic principle" in liver extract, which since 1939 has been known as vitamin B_6 or pyridoxine, seemed to Hartlieb a logical therapeutic factor for hyperemesis gravidarum, the more so since this substance had been used with good results by American investigators in the treatment of hyperemesis. He describes his experience in 18 pregnant women who were referred to the hospital because of uncontrollable vomiting. The histories of two women with a very severe form of hyperemesis are presented. These two, like all the other women, responded favorably to the vitamin B_6. Patients with sodium chloride deficiency were given in addition injections or drip infusions of sodium chloride solution, and those who had acetonuria were given dextrose solution. Although eight of the women responded to the vitamin B_6 treatment within the first three days, the others required a more prolonged treatment. The author warns against discouragement if effects are somewhat delayed.

Lancet, London

2:789-842 (Oct. 17) 1953

Change and Permanence in Education for Medicine. H. Himsworth. —p. 789.
*Ion-Exchange Resins in Treatment of Anuria. B. M. Evans, N. C. H. Jones, M. D. Milne and H. Yellowlees.—p. 791.
Epidemic Bronchitis in Children. D. H. Garrow and J. W. Fawcett. —p. 795.
Sudden or Unexpected Natural Death Due to Ruptured Intracranial Aneurysm: Survey of 250 Forensic Cases. T. A. R. Dinning and M. A. Falconer.—p. 799.
Alkalosis in Infants: Treatment by Intravenous Infusion of Ammonium Chloride. S. A. Doxiadis, M. K. Goldfinch and K. S. Holt.—p. 801.
Hexamethonium in Polyvinylpyrrolidone. E. A. Murphy and J. Eastwood. —p. 804.
New Method for Differentiation of Sickle-Cell Anaemia from Sickle-Cell Trait. J. M. Vandepitte and L. A. Louis.—p. 806.
Perforated Duodenal Ulcer in Children. D. M. Bell.—p. 810.
Traumatic Haemothorax. R. Batten.—p. 811.

Ion-Exchange Resins in Anuria.—Evans and associates describe their experience with a sodium sulfonic resin in the treatment of five cases of anuria or severe oliguria complicated by hyperkalemia, together with relevant observations of the effect of the resin in a normal person on a low electrolyte diet. All the patients with anuria were from other hospitals and so the resin treatment was not begun as early as recommended in this report. The binding capacity of the resin was 3.4 mEq. cation per gram of resin. About 90% of this was sodium, but 3% calcium and 7% ammonium ion was also present. Since the resin was completely free from potassium, the small proportion of cation other than sodium was of little, if any, importance. The resin was administered both by mouth and by retention enema, the dosage being 15 gm. three or four times daily by mouth and 30 gm. daily by enema. The serum-potassium level was satisfactorily reduced in four of the patients, with final recovery in two. Two patients died from severe irreversible renal damage and one from hyperkalemia before the resin could exert any significant effect. The resin is more effective in removing potassium when given by mouth than when given by retention enema. The resin continues to take up potassium in exchange for sodium throughout its passage through the gastrointestinal tract. The effect is, therefore, delayed after the first dose and prolonged after the last one. A scheme of routine treatment with ion-exchange resins is given for anuria and severe oliguria.

Medical Journal of Australia, Sydney

2:401-440 (Sept. 12) 1953

Disseminated Lupus Erythematosus. R. B. Perkins.—p. 401.
Systemic Lupus Erythematosus. H. Taylor.—p. 403.
Detection of Rhesus Antigen and Antibodies: Simple and Rapid Method. H. Ward.—p. 405.
Neurosis in General Practice. H. O. Chapman.—p. 407.
Preparation and Stability of Field's Stain. E. R. Cole and A. K. Sewell. —p. 415.
Mortality from Tetanus in Australia. H. O. Lancaster.—p. 417.

2:441-480 (Sept. 19) 1953

Diagnosis and Treatment of Epidemic Diarrhoea. A. Garven.—p. 447.
Diarrhoea and Vomiting in Children. D. G. Hamilton.—p. 450.
The Subarachnoid Space: Some Experimental Approaches to its Pathology. W. J. Simmonds.—p. 452.
*Incidence of Congenital Malformations Following Maternal Rubella at Various Stages of Pregnancy. I. S. Collins.—p. 456.

Rubella in Pregnancy.—A review of the investigations conducted in recent years by various authors shows general agreement on the lessening of risk of congenital malformation in infants whose mothers contracted rubella after the fourth month of pregnancy. The risk is very great after infection in the first four months, the proportion of affected children being 70 to 80%. Information is limited because of the small number of cases of rubella occurring during late pregnancy. Clinical impressions suggest that convalescent serum and gamma globulin are helpful in prophylaxis, but this has not been proved.

Minerva Medica, Turin

44:651-678 (Sept. 19) 1953

Behavior of Some Plasma Components in Patients with Tuberculosis During Streptomycin Therapy: I. Protein Picture. V. Caramello, A. M. Pelocchino and G. Pescetti.—p. 651.
Id.: II. Lipid Picture. A. M. Pelocchino, G. Pescetti and V. Caramello. —p. 655.
Id.: III. Plasma Lipase. G. Pescetti, V. Caramello and A. M. Pelocchino. —p. 658.
Hematochemical Studies on Mediterranean Blood Disorder: Alkali-Fast Hemoglobin. S. Agnisetta and S. Massenti.—p. 661.
*Congenital Cyanosis Due to Methemoglobinemia. A. De Gasperis, R. Donatelli and F. Rovelli.—p. 664.

Congenital Cyanosis Due to Methemoglobinemia.—Congenital cyanosis due to methemoglobinemia is rare, only 100 cases having been reported. Methemoglobin is a pigment in which the iron is in a ferric state and not in a ferrous combination as in hemogloblin and oxyhemoglobin. It is a stable product unable to transport oxygen and is normally present in the blood in small amounts—about 1 to 2% of the total hemoglobin content. The balance between hemoglobin and methemoglobin is maintained by a complex enzyme system. When this balance is altered either by a dysfunction of the intraglobular systems that reduce the methemoglobin or by the presence of oxidants that produce methemoglobin more rapidly than the cell mechanism is able to reduce it, great amounts of methemoglobin concentrate in the blood and cyanosis results. A methemoglobin concentration of 1.5 gm. per 100 cc. of blood produces visible cyanosis. This is especially marked on the lips, fingers, ears, tongue, nose, and mucous membranes of the mouth. Clubbing of the fingers is never present in these patients nor is the porphyrin metabolism or the renal function impaired. The plasma level of ascorbic acid is below normal. Large amounts of vitamin C have been used with favorable results in treatment of congenital cyanosis due to methemoglobinemia. The most effective drug is methylene blue given either parenterally or orally. Since the condition is generally congenital, the results are transitory. The authors cite the cases of three women (32, 26, and 28 years of age) in whom cyanosis, present since birth, was ascribed to a congenital heart defect. Clinical, radiologic, and electrocardiographic examinations did not reveal a cardiovascular anomaly and there was no clubbing of the fingers. The diagnosis was established after determination of the methemoglobin by gasometric means in one patient and in the other two after tubes containing their blood samples failed to become bright red when shaken. One patient refused therapy. The second improved with vitamin C, cytochrome C, and methylene blue therapy. The third patient who was pregnant and whose methemoglobin concentration was 10.8 gm. per 100 cc. of blood was given vitamin C and cytochrome C. She continued the pregnancy to term, but cyanosis became aggravated during the puerperium. It was controlled with methylene blue. Conclusions on the therapeutic activity of the cytochrome C in this condition cannot be drawn from the authors' limited experience. These are the first cases of congenital cyanosis due to methemoglobinemia reported in the Italian literature.

Nordisk Medicin, Stockholm

50:1251-1284 (Sept. 10) 1953. **Partial Index**

Peripheral Arterial Insufficiency. O. Selvaag.—p. 1251.
*Paroxysmal Auricular Fibrillation of Functional Type. E. Engelfeldt.—p. 1257.
Plasma Concentration of Quinidine in Reversion of Auricular Fibrillation. G. Wallgren.—p. 1260.
Anticoagulation Treatment in Cerebral Apoplexy: Differential Diagnosis of Cerebral Hemorrhage and Encephalomalacia. H. Stürup and T. Fog.—p. 1261.
Prognosis in Subarachnoid Hemorrhage. E. Frantzen.—p. 1268.
Glaucoma After Contusion of Eye. A. Oksala.—p. 1274.

Paroxysmal Auricular Fibrillation of Functional Type.—Engelfeldt discusses paroxysmal functional auricular fibrillation on the basis of nine cases treated in the Garnisonssjukhus in the period 1950-1951. Organic heart disease and thyrotoxicosis must be excluded. Sometimes the rhythm becomes regular in the course of a few minutes, in other cases the fibrillation becomes permanent if treatment is not instituted. Among the precipitating factors are emotion, effort, infection, and intoxication. The symptoms vary. Palpitation of the heart is common. With increasing disturbance there are fatigue, general indisposition, and sudden vertigo. Cardiac decompensation and angina pectoris call for special attention. Cardiac decompensation depends on the heart rate. Angina pectoris is not a frequent symptom but may occur, sometimes in intensive form. Every newly discovered case of paroxysmal auricular fibrillation requires thorough examination in a hospital. If it becomes clear that the fibrillation is purely functional, the condition must be explained to the patient as soon as possible. The symptoms often abate spontaneously. They may be severe and incapacitating. If they continue for several hours, treatment is indicated. Quinidine is the drug of choice. Digitalis should mainly be used to decrease the heart rate in alarming tachycardia. The prognosis is good.

Schweizerische medizinische Wochenschrift, Basel

83:971-998 (Oct. 10) 1953. **Partial Index**

*Chronic Adrenal Insufficiencies. J. Warter and J. Schwartz.—p. 971.
Remarks on Phonocardiography and on More Intimate Cardiac Rhythms: II. Communication. H. Scholer and M. Springenschmid.—p. 975.
Clinical Importance of Infundibular Thorax. T. Wegmann and F. Schaub.—p. 986.

Chronic Adrenal Insufficiencies.—According to Warter and Schwartz of the University of Strasbourg, steroid balance is a satisfactory biological test that offers considerable aid in the diagnosis of Addison's disease. Excretion of 17-ketosteroids and corticoids in the urine was much reduced in four men between the ages of 22 and 60 and in two women aged 61 and 41 with Addison's disease. Determination of 17-ketosteroids and corticoids in the urine was repeated in five of these patients after they had been given 30 units of corticotropin (ACTH) by intravenous infusion in the course of three hours. Excretion of steroids was modified only slightly, the ratio of 17-ketosteroids being increased from none to 1.2 mg. and that of corticoids from none to 0.10 mg., while in normal persons the excretion of 17-ketosteroids and corticoids in the urine was increased from 3 to 15 mg. and from 0.40 to 1 mg., respectively. The excretion of 17-ketosteroids and corticoids in the urine was determined in six additional patients, all women between the ages of 34 and 47. Pronounced asthenia and loss of weight were observed in all of these patients. Abnormal pigmentation was present in only three. There was no increased fatigability; the blood electrolytes were not altered; and the basal metabolic rate was definitely lowered in one patient, but was normal in the others. The extremely weak excretion of 17-ketosteroids in the urine and the subnormal excretion of corticoids established the diagnosis of mild types (formes frustes) of hypophysial insufficiencies with essentially adrenal manifestations. Repeated determinations of steroid excretion after intravenous infusion of 30 units of corticotropin for three hours revealed a definite response of the urinary 17-ketosteroids and normal increase of the corticoids. Repeated explorations may be required for the differential diagnosis of primary adrenal insufficiency and that secondary to hypophysial insufficiency. There is a certain parallel between the adrenal, abortive types of Simmond's disease and hypophysial myxedema. Secondary adrenal insufficiency is benefited by treatment with corticotropin combined with small doses of cortisone. Determination of urinary steroids in a woman with dyspnea on effort and with a pronounced senile appearance showed a ratio of 0.82 mg. of 17-ketosteroids and of 0.40 mg. of corticosteroids. Death occurred suddenly and necropsy revealed an adenoma of the left adrenal with atrophy of the remaining parenchyma. In exceptional cases, the steroid balance may contradict the clinical picture; these are cases of discordant impairment of the adrenals with mixed signs of hyperfunction and hypofunction.

Strahlentherapie, Munich

92:1-164 (No. 1) 1953. **Partial Index**

Adenosine Triphosphoric Acid in Blood and of Elimination of 17-Ketosteroids in Urine in Course of Deep Roentgen Irradiation. H. J. Maurer and K. H. Pfeffer.—p. 19.
Importance of Ultrafractionation for Biological Effect of Electronic Irradiation. K. Müller and H. Hase.—p. 33.
Therapy of Cancer of Cervix Uteri. J. Ries and H. Schlögl.—p. 61.
Prognosis of Cervical Carcinoma on Basis of Histological Picture. E. Mayr.—p. 67.
Statistical and Experimental Investigation of Parametrial Dissemination of Cervical Carcinoma. F. Feldmann and M. Maué.—p. 80.
Relations Between Histological Structure and Cure of Cervical Carcinoma. P. Stüper.—p. 89.
*Carcinoma of Female Genitalia and Sexual Continence. G. Schömig.—p. 156.

Carcinoma of Female Genitalia and Sexual Continence.—Schömig says that most authors assume that certain factors involved in sexual activity, such as trauma incident to delivery, increase the incidence of carcinoma of the female genitalia. This implies that the incidence should be lower in the absence of such factors. Studies of the medical records of several convents provided data on 1,025 nuns who had died during the first half of this century. The statistics on the life expectancy of the general population during this period served as a basis for comparison. Deaths from carcinoma were of about the same frequency in both groups, but a breakdown of the over-all carcinoma mortality according to localization revealed differences. For instance deaths from carcinoma of the stomach accounted for 39.1% of all carcinomas among nuns, whereas among the general population the percentage of deaths from gastric carcinoma was 25.5%. Deaths from carcinoma of the genitalia was only slightly lower among nuns than among the general population, but the exact localization of the genital cancer was indicated in only 7 of 26 nuns. Among these 7 there was one carcinoma of the uterine cervix, four carcinomas of the corpus uteri, and two of the ovaries. In order to obtain more information about the distribution of genital carcinomas in nuns, Schömig examined the case records of nuns treated for genital carcinoma at the Women's Clinic in Würzburg during the last 30 years. Of 17 nuns 11 had carcinoma of the corpus uteri, 5 had ovarian carcinoma, and 1 had a uterine sarcoma. There was not a single case of carcinoma of the uterine cervix, whereas on the basis of other statistics 10 to 14 cases of cervical carcinoma could have been expected. The author cites a report by Gagnon in 1950, who also commented on the absence of carcinoma of the uterine cervix in nuns, whereas in other women this form of carcinoma accounts for the large majority of genital cancers.

92:165-324 (No. 2) 1953. Partial Index

Concurrence and Differential Diagnosis of Carcinoma and Sarcoma on Lupus Vulgaris. K. W. Kalkoff and E. Macher.—p. 181.
Influence of Irradiation on Life Expectancy of Patients with Mycosis Fungoides. E. Böhmer and H. J. Heite.—p. 203.
Relations Between Histological Structure and Cure of Carcinomas of Cervix Uteri: II. Investigations on Degrees of Maturity and Similar Classifications. P. Stüper.—p. 219.
Radium Treatment of Carcinoma of Lip. N. Nicolov.—p. 251.
*Treatment of Sarcoma of Tonsils. H. Trübestein.—p. 281.
Spontaneous Fractures of Pelvis and Neck of Femur Following Irradiation: Three Cases, Spontaneous Cure in Two Cases. R. Birkner.—p. 297.

Treatment of Sarcoma of Tonsils.—At the Roentgen Institute of the University of Frankfurt, a total of 52 sarcomas of the tonsils (32 in males and 20 in females) were subjected to roentgen therapy in the course of the last 22 years. In some of these patients, irradiation was employed after surgical treatment, whereas in others irradiation was the only treatment. Tonsillar sarcoma is most frequent during the sixth decade of life, irrespective of the sex of the patient, although it may occur also in children. Histological records that were available for 39 of the patients showed that round cell sarcoma was present in 17, lymphosarcoma in 15, retothelial sarcoma in 5, myxosarcoma in 1, and spindle cell sarcoma in 1. Symptoms persisted for an average of three months; there was no noticeable difference in duration of symptoms whether the patient was free from lymph node metastases or had such metastases on one or both sides. Only patients with generalized metastases had a longer history. Clinically, tonsillar sarcoma usually takes the form of an ulcerated tumor, except that in lymphosarcoma the surface of the tumor may be smooth. An ulcerated tumor on one side may be mistaken for Plaut-Vincent's angina and a smooth tumor for a peritonsillar abscess. Lymph node metastases were present in 59% of the cases at the time treatment was begun. The techniques used included one customary at the Frankfurt Roentgen Institute, later simple fractionation and finally a modified protracted fractionated irradiation. Five fields were usually irradiated: two tonsillar, two submental, and one ipsilateral buccal field. Irradiation proved permanently effective only in patients free of lymph node metastases or in those in whom they were restricted to one side, and even in these cases only if an adequate total dose has been applied. In patients with generalized metastases, life may still be prolonged by applying adequately large doses to the lymph node metastases. It is important to irradiate both sides, even the apparently uninvolved side. If surgical treatment is employed first, then postoperative treatment should employ the same high doses as would be used if no operation had been done.

Tidsskrift for Den Norske Laegeforening, Oslo

73:657-692 (Sept. 1) 1953. Partial Index

Cushing's Syndrome and Accompanying Psychic Disturbances: Case with Periods of Marked Confusion. C. L. Laane.—p. 665.
Achillobursitis. O. Knutrud.—p. 669.
*Cerebral Complications in Acute Gastroenteritis in Infants. E. Grønvik and P. Skjelbred.—p. 670.
Congenital Malformations and Teratomas. U. Rolfsen.—p. 673.

Cerebral Complications in Acute Gastroenteritis in Infants.—Grønvik and Skjelbred present three cases of grave cerebral complications after acute gastroenteritis in infants treated in the Bergen Children's Clinic. In one case there was hemiparesis; in one, hydrocephalus; and in the third, subdural hematoma. The cases point to dehydration and circulatory defect as the cause of the cerebral injury. The cerebral changes in gastroenteritis with intoxication can depend on two unlike mechanism, each of which can bring about several kinds of pathological changes in the brain and thus different neurological sequels. In the first place, dehydration can lead to a physical change in the blood with hemoconcentration, increased viscosity, and slowed blood stream, which will predispose to thrombus formation either in a vein or in one of the large venous sinuses in dura and may cause different symptoms, depending on the size and location of the thrombus. In the second place, the prolonged circulation time leads to anoxemia, which can cause injury of nervous tissue and damage to blood vessel walls and so predispose to hemorrhage. The importance of quickly and effectively overcoming dehydration is stressed in acute gastroenteritis in infants by parenteral administration of fluids and adequate administration of electrolytes.

Transactions Royal Soc. Trop. Med. and Hyg., London

47:351-440 (Sept.) 1953. Partial Index

*Neuroparalytic Accidents of Antirabies Vaccination. A. J. S. McFadzean and G. H. Choa.—p. 372.
Note on Sleeping Sickness Control in Northwest Ashanti (Gold Coast). D. Scott.—p. 405.
Eosinophilic Syndrome: Epidemiological Study. W. J. Aitken and K. P. Roy.—p. 418.
Intensive Treatment of Schistosomiasis with Sodium Antimony Tartrate: Report on 200 Cases. S. M. Talaat.—p. 425.

Neuroparalytic Accidents in Antirabies Vaccination.—McFadzean and Choa review the incidence of neuroparalytic accidents of rabies vaccination. In Hong Kong in the years 1949 to 1952, 14,119 patients were given the Semple vaccine and 17 cases of neuroparalytic accidents occurred, an incidence of 1:831. Two different types of pathological lesions have been mentioned in the literature. An acute perivascular myelinoclasis is found most frequently. The second type of lesion is a polyradiculoneuronitis indistinguishable from that encountered in fatal cases of the Guillain-Barré syndrome. Evidence suggests that perivascular myelinoclasis is the expression of a sensitization reaction to the nerve substance contained in the vaccine. The response of this type of lesion to corticotropin and cortisone strengthens this conception. The pathogenesis of polyradiculoneuronitis is unknown, but it is presumed to be similar to that of the Guillain-Barré syndrome. The authors describe clinical and laboratory findings in 14 cases of neuroparalytic accidents. Nine were group 1 lesions (four transverse myelitis, one an ascending myelitis, three encephalomyelitis, one encephalitis without paralysis) and five were group 2 lesions with polyneuritis of varying severity. Group 1 lesions showed a polymorphonuclear leukocytosis that was not found in group 2. The cerebrospinal fluid in group 1 cases showed a variable increase in cells and in protein, while that in group 2 showed albuminocytological dissociation with a total increase in protein similar to that encountered in the Guillain-Barré syndrome. Constitutional symptoms occurring during the course of antirabies vaccination should be regarded as prodromal symptoms of group 1 or as the invasive phase of group 2 lesions. Three cases of group 1 and one case of group 2 lesions were treated with diphenhydramine given intravenously without appreciable effect on the central nervous system lesion. Three cases of group 1 were treated with corticotropin and responded satisfactorily. One group 2 lesion was similarly treated with doubtful effect.

Tórax, Montevideo

2:109-206 (June) 1953. Partial Index

*Chemical Casectomy with Isoniazid (Rimifon) with Appearance of Mechanical Defects (Pneumatic Changes). P. Purriel, E. Casamayou, O. Muras and others.—p. 115.
Extrapleural Pneumothorax: Observations on 29 Cases. J. P. Ibarra, J. Dubourdieu, M. Antes and R. Vignale.—p. 145.
Late Therapeutic Results (6 Months) in 45 Patients with Chronic Pulmonary Tuberculosis Treated for a Semester with Isoniazid. P. Purriel, O. Muras, C. La Torre and others.—p. 182.

Chemical "Casectomy" from Isoniazid (Isonicotinic Acid *Hydrazide*).—The authors observed roentgenologic changes in pulmonary cavities of seven young adult patients with advanced bilateral ulcerocaseous pulmonary tuberculosis who were given isoniazid for six months. Positive sputum was present in all of these. In the course of the treatment progressive marked improvement in the general condition and in symptoms with conversion of the sputum paralleled roentgenologic changes of the lung. The latter consisted of disappearance of the pneumonic and bronchopneumonic lesions and the development of large cavities in the parenchyma of the previously involved areas. The cavities rapidly increased in size, assuming a spherical shape and losing the thick walls, the shadow of which was seen as an extremely fine line. At the end of the treatment clinical cure was complete and the sputum was converted. The cavities remained open. Six months after discontinuation of the treatment, the good clinical and bacteriological results persisted. The cavities remained open. Intracavitary hyperpressure was observed by manometry in some but not all cavities. A pneumonectomy was performed on two patients. It was observed in the resected lung that the effect of the drug is due to its diffusion into the caseous material, the cavitary wall, and the parenchymal area of the tuberculous lesion with elimination of the pathological material through the bronchi. The process is one of a chemical "casectomy," which leaves a mechanical defect, after having produced an anatomic cure of the lesion. The mechanical and dynamic conditions of the lung after cure permit the cavities to remain open, unmovable, and free from any danger of infection, provided they communicate with normal bronchi or with bronchi that become normal in the course of the treatment.

Tubercle, London

34:259-286 (Oct.) 1953

Functional Prophylaxis in Collapse Therapy. G. Birath.—p. 260.
Bronchography in Pulmonary Tuberculosis: Report of Year's Experience with "Dionosil." J. K. McKechnie.—p. 271.
Nydrazid-Isoniazid in Treatment of Tuberculous Mental Defectives. M. Engler.—p. 275.
Familial Erythema Nodosum. J. T. Harold.—p. 279.

Ztschr. f. d. ges. innere Medizin, Leipzig

8:717-764 (Aug. 15) 1953. Partial Index

Is Gastroscopy Suited to Promote Early Diagnosis of Carcinoma of Stomach? K.-H. Straube.—p. 718.
*Pathogenesis and Treatment of Tuberculosis of Cervical Nodes in Adults. F. and M. Trautmann.—p. 725.
Study on Absorption of Protein and Fat After Total Gastrectomy. M. Steingräber and H. Burmeister.—p. 737.
Methods of Paper Electrophoresis. A. Knapp and H. Sieler.—p. 741.

Tuberculosis of Cervical Lymph Nodes in Adults.—In most of the 54 men and 132 women with tuberculosis of lymph nodes reported on by Trautmann, the disease was localized in the neck; it was generalized in 16; 25 patients had enlarged axillary lymph nodes in addition to cervical or hilar lymph nodes. Of the 186 patients, 178 were submitted to roentgen examination of the chest, and calcified foci were observed in the lungs of 155. Tuberculosis of the cervical lymph nodes apparently results from hematogenous dissemination in most of the adult patients. Only 46 (24.7%) of the 186 patients had recurrences of tuberculosis of the cervical lymph nodes developed during childhood, but 42 of these also had pulmonary foci. About 10% of the patients had supraclavicular lymphomas that probably were of ascending lymphogenous origin from the thoracic cavity. These data strongly suggest that general treatment has the first place in the management of tuberculous lymphadenitis of adults. The author agrees with the Swiss workers Kaiser, Jacob, and Wissler that tonsillectomy does not exert any notable effect on the course of the tuberculous lymphadenitis. There is no definite proof that the risk of recurrence is reduced by early radical removal of the involved lymph nodes, but the duration of the lymphadenitis may be shortened by the surgical intervention. Improvement of the general condition, however, must precede such an operation in the course of which serious complications, such as permanent paralysis of the accessory nerve and temporary paresis of the hypoglossal nerve and of the ramus of the jaw, are not always avoided, even by the experienced surgeon. Roentgen irradiation does not decisively change the course of the tuberculosis of the lymph nodes. Because of the associated risk of exacerbation and miliary dissemination, roentgen irradiation is contraindicated in patients in poor general condition. Since August, 1952, 33 patients with tuberculosis of the cervical lymph nodes were treated with isoniazid alone in doses of 5 mg. per kilogram of body weight administered daily by mouth. Isoniazid exerted a satisfactory effect on simple lymphomas, although spontaneous disappearance of this lesion may frequently occur. Fistulas also showed a good response, while caseous lesions responded slowly and there was a tendency for recurrence. Removal of the residual nodes in a sanatorium is recommended after termination of the isoniazid therapy. This method of treatment seems to be more rational and promising than early surgical intervention or early irradiation. Lymphomas of cherry size frequently disappeared completely. Surgical intervention should be considered only after failure of treatment with isoniazid for four weeks. Treatment of tuberculosis of lymph nodes, the duration of which may extend over a long period, should be adapted to each patient since personal and mental influences have a definite effect on the course of the disease.

Zeitschrift für Orthopädie, Stuttgart

84:1-176 (No. 1) 1953. Partial Index

*Completely Automatic Nailing of Fracture of Neck of Femur. G. Küntscher.—p. 17.
Measuring the Acetabular Angle in the Newborn. A. Ravelli.—p. 33.
Technique of Resections and Arthrodeses in Knee and Ankle Joints. A. Katthagen.—p. 36.
Development of Longitudinal Arch of the Normal Foot After Birth. P. Pitzen.—p. 44.
*Insidiously Progressing Metatarsal Fractures in Children. O. Popp.—p. 55.
Aseptic Necrosis of Head of Humerus. H. Jud.—p. 61.

Completely Automatic Nailing of Neck of Femur.—Küntscher describes a method of nailing the neck of the femur that he regards as simple and reliable. He shows that, because of the large muscles in the hip region, a plaster of Paris cast cannot counteract the mechanical tension forces that prevent healing of the bone; only a nail acting on the bone itself can do this. In a diagram showing two possible positions of the nail, he demonstrates that a nail tending toward the horizontal line does not attain adequate mechanical rigidity, because of the width of the medullary cavity and the weakness of the cortex of the bone. If, however, the nail is introduced in an extremely steep direction, it is securely wedged in the cortical tube, and slipping out is prevented by a transverse screw. Another disadvantage of the more horizontally directed nail is that it does not prevent torsion of the parts of the fracture, whereas such torsion is impossible with the nail in the more steep direction. Furthermore pseudoarthrosis has been known to develop with the more horizontally directed nail and has been corrected with a steep nail. The correct site for the drill hole is found by placing a (femur) nail on the antero-posterior roentgen exposure. This nail passes through the center of the head of the femur, and at the point of its intersection with the outer compact wall (corticalis), the drill hole should be made. The various steps of the insertion of the nail are described. Its line of direction coincides with that of the muscular traction and thus the mechanical conditions are more favorable than with any other method.

Insidious Metatarsal Fractures in Children.—Whereas insidiously progressing metatarsal fractures have long been known to occur in adults and are generally recognized, they have rarely been recognized in children. Popp presents the histories of six children, between the ages of 2½ and 14 years, who had such fractures. The clinical and roentgenologic aspects resembled those of march fracture in adults. It is assumed that these metatarsal fractures in children are not completely due to mechanical factors, but that predisposition, probably on the basis of rachitic or other metabolic disturbances, plays a part.

BOOK REVIEWS

Doctors, People, and Government. By James Howard Means, M.D. Cloth. $3.50. Pp. 206. Atlantic Monthly Press: Little, Brown & Company, 34 Beacon St., Boston 6, 1953.

This book is a discussion of some of the factors or forces that the author claims must contribute to the achievement, for the American people, of "the best medical service which science and art permit." Mainly, these factors or forces are those represented by existing formal organizations having a stake in "the health problem." The author's general goal is more sharply defined on page 63: ". . . the people are actually to get medical care as good as that which existing medical knowledge makes possible." To attain his goal all physicians would obviously need to have precisely equal ability and experience. The young physician could not have any patients, because that would mean that his patients are not obtaining this maximum quality of medical care that existing medical knowledge makes possible. No student of the social sciences would claim that the best could be uniformly available or that it would be possible to raise all below-average incomes up above the average. Presumably the author's ivory tower view results from his having spent his active life in a great medical school and a truly fine hospital. If he had been a practitioner instead of a teacher, he might have realized that the attainable goal is to improve minimum, average, and maximum quality levels of medical care.

The other great weakness of his book is his persistence in viewing all his "people" in just one of their organizational aspects—government. There can be little doubt that Dr. Means himself sets great store on the dignity and worth of the human individual; however, nowhere does he hint at the variations in the attitudes of individuals toward their own physicians, at the reactions of Americans to what they learn of the attitudes of Englishmen and Russians who are now living with some form of collective medicine, or at the wide variations among segments of the American people as to what "medical service" really means to them. The author obviously takes himself too seriously. Of Eisenhower's statement that he did not like the words "compulsory" and "socialized," Dr. Means asks, "Who in this country does?" (page 165). The facts seem to indicate that, for a number of years, persons who do like those words have been guiding government policy in numbers clearly disproportionate to those of similar belief among the electorate. It is in these matters of medical economics that Dr. Means does not express the opinions held by many able physicians.

The organization of the book is somewhat more rigorous than the title would indicate. In chapter 1 the author states that the medical world consists of government agencies (federal, state, and local), the medical education system, physicians and their organizations, and the persons who need medical care. The organizations that represent medicine and connect it with government and with the people are described: the American Medical Association, American Public Health Association, American Hospital Association, American Nurses' Association and National League for Nursing, American Association of Medical Social Workers, and the American National Red Cross. In chapter 2 he discusses the medical school. The pressure of requirements for admission to medical schools is a comparatively recent development, as there were formerly fewer applicants with only general educational backgrounds. He observes that medical schools have changed very little during the past half century, but they are learning that integration of courses and preparation for responsibilities (clinical, administrative, and educational) are as important as the teaching of isolated medical facts. This chapter is his best, as one would expect from a man with his background of so many years of teaching at the Harvard medical school.

Of the hospitals, he states that, although hospitals are of different kinds, some teaching is done in most of them, and the best medical education is afforded when medical students have the most contact with patients. He highly approves of the ward system used at his hospital (Massachusetts General, Boston) as giving good training to the student and superior medical care to the patient. In chapter 4 he contends that, although the people may need different physicians, one should maintain responsibility for the patient in any form of group practice or hospital practice. He contends that this desirable relationship is too often stifled by the fee-for-service; it causes the physician to take too many cases, to have too little time to think, to worry about preparing for his own retirement, to call patients to his office more than necessary; and it keeps some patients away. He observes that some of these objections can be removed by having professional grievance committees or a fixed fee schedule.

In chapter 5, "Are Our Medical Needs Being Met?" he contends that there is in this country a "shortage of [medical] personnel, shortage of facilities, irregular distribution of both, inadequate production of new personnel, inefficiencies in operation, mounting costs, and lack of organization for the best utilization of professional skills both in the promotion of health and in the provision of medical care." This statement may be based on a number of pronouncements emanating from Washington, from the committee on the nation's health, or from certain journalistic authorities on medical care. He offers no reasoned proof to support his contention; perhaps he assumes no proof is necessary other than his premise.

He is more moderate in stating his attitude on the role of government. Government should help, but not exclusively, with financial aid to medical schools and for other health care. He contends that the British national health system should be studied in relation to Britain only and observes further: ". . . in the United States it will be in the end the whole people, not the doctors alone, who will direct the course of events" (page 106). Regarding government medicine in the United States, he observes that we now have government medicine at national, state, and local levels, largely in the form of public health work, medical education, and hospital service, and, to a much smaller extent, in the realm of services of physicians. He sketches the activities of the U. S. Public Health Service, medical services in the armed forces, and in the Veterans' Administration. He finds that the provision of medical service for the dependents of members of the armed forces and for the non-service-connected disabilities of veterans pose questions of public policy.

In chapter 8, "American Attempts at Health Planning," most of his examples of adequate medical service are provided under group practice, often coupled with prepayment plans. The monopolistic aspects of cooperative health plans and their threat to the maintenance of free choice of physician does not bother the author. He concludes that the role of organized medicine has been negative and uses some of his sharpest language in criticizing the American Medical Association actions in 1932, 1937, 1948, and 1953. Investigation reveals, however, that the most positive aspect of the program of the American Medical Association from the standpoint of laymen is found in the improvement of the quality and quantity of medical care. The probability that a young woman will die during pregnancy, childbirth, and confinement today is only one-ninth the probability that her own mother would have succumbed a generation ago. This is an example of the positive program from the standpoint of the people. Taking medical education as another example, we can understand why Dr. Means is not particularly impressed with the contribution organized medicine has made in improving the quality of medical training, because the Harvard medical school could probably triple its enrollment of medical students without risking disapproval (because of lowered quality) by the American Medical Association. Nor does Dr. Means indicate

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These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

that he has carefully read the history of the American Medical Association's attitude toward voluntary health insurance, which it has never opposed. Regarding group practice (a number of past presidents of the American Medical Association and currently three of its trustees are group practice physicians), Dr. Means fails to distinguish between group practice *per se* and group practice coupled with monopolistic prepayment medical plans. We wonder what his attitude would be toward automobile insurance if his insurance company refused to indemnify unless he had his car repaired in a specified repair shop.

Finally, he gives his solution to a problem that he did not fully describe. His ideal solution could not be reached solely by government but by a cooperation of government and nongovernment medicine in realistic and flexible experiments. Dr. Means' ideal would be equality of care (via prepayment) in a medical system centered in a teaching hospital, united with a medical care plan and an adequate Blue Cross system, with premiums paid for those who could not afford to pay, with all doctors salaried, and all patients available for teaching. He is not concerned with the problem of providing the people of Jordan, Montana, and Kanab, Utah, with the best medical care, nor is he concerned with the fact that the American people choose to spend, on other items, $24 of their family budgets for every dollar spent for medical care. Dr. Means has not provided the broad prospective of the problem suggested by the title "Doctors, People, and Government." Moreover, the index reveals, in its selection of items, a lack of the broad reading that should have preceded such a generalized treatment.

The approach taken by the author will probably be apparent to all who read such statements on the jacket as: "The American people are not getting adequate medical care at a price they can afford. Organized medicine in the United States . . . is essentially a guild of doctors which seeks to preserve at all cost the specially privileged position of the medical profession. It is too little interested in co-operating with the Government to attain a national health program."

The Heart Beat: Graphic Methods in the Study of the Cardiac Patient. By Aldo A. Luisada, M.D., Associate Professor of Medicine and Director, Division of Cardiology, The Chicago Medical School, Chicago. Cloth. $12. Pp. 527, with 311 illustrations. Paul B. Hoeber, Inc. (medical book department of Harper & Brothers), 49 East 33rd Street, New York 16, 1953.

Dr. Luisada's long and broad interest in the numerous manifestations of activity of the heart is evident in his present volume, which illustrates the numerous approaches that have been developed, approaches to which he has contributed significantly. The book reviews techniques of recording the cardiogenic vibrations of the thoracic and abdominal walls; venous and intrathoracic pulsations and pressure tracings; pulsations in the aorta, arteries, and veins; radiographic techniques including roentgenkymography and electrokymography; and electrocardiography. It provides an introduction into these fields but unfortunately is often very sketchy. Many different techniques are mentioned and discussed only briefly. While this will not provide satisfaction to the scholar in the field, it will act as an open-sesame to students and others seeking a convenient approach to these topics, some of which are hardly known except to a small group active in the field. The survey of the literature is generally adequate and particularly valuable to the English-speaking physician since it gives many references to the German and Italian contributions.

In the second half of the book some of the techniques described in the first half are used in the analysis of the normal and diseased heart. In places the discussion is reduced to a mere cataloguing of conditions and situations; for example, the complex congenital malformations of the heart are treated in nine pages. Such treatment can not provide for an adequate discussion of the dynamics of these disorders. However, there are advantages in the conciseness that can provide an introduction to the use of the various available techniques. If the book helps to stimulate a renewed interest in such techniques as phonocardiography, phlebography and others, it will have adequately served its purpose. It is recommended for medical libraries, students of cardiology, and those interested in the use of instrumentation in heart disease.

Die Bewegungsbestrahlung. Von Dr. F. Wachsmann, Dozent für medizinische Physik, und Dr. G. Barth, Dozent für Strahlenheilkunde und physikalische Therapie, Universität Erlangen. Cloth. 36 marks. Pp. 192, with 124 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart-O; American agent, Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1953.

This monograph discusses all forms of therapy in which either the source or the target of the ionizing radiation is kept in motion during the treatment. The text is detailed, explicit, and clear. There is a wealth of well-reproduced photographs of apparatus to illustrate techniques, and the mathematical diagrams are drawn with exquisite precision. The bibliography fulfills the promise made in the preface of a complete coverage of existing literature, including very recent American and Scandinavian contributions. The book should be seen by every roentgenologist.

The Principles of Thoracic Anaesthesia Past and Present. By William W. Mushin, M.A., M.B., B.S., Director of Anaesthetics, Welsh National School of Medicine, Cardiff, and L. Rendell-Baker, M.B., B.S., M.R.C.S., Consultant Anaesthetist, United Cardiff Hospitals and Welsh Regional Hospital Board, Cardiff. Cloth. $9.50. Pp. 172, with 217 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1953.

This book makes more than one appeal to the reader. At first glance, it might be considered a historical account in the sense that the story behind modern anesthesia for thoracic surgery is told step by step, from the basic consideration of respiration itself to how one deals with the respiratory apparatus when necessary. Resuscitation is discussed at length, and the ancient devices that were useful in treating patients are described and well illustrated. Early apparatus for intubation are shown, particularly for use against diphtheric croup, and the attempts at anesthesia for operations on the thorax between 1888 and 1900 are illustrated and described. Methods of obtaining positive and negative pressures also are presented. Insufflation techniques (1907 to 1913) and automatic inflation (1909 to 1911) are adequately discussed and well illustrated.

Few, if any, of the methods used for the production of thoracic anesthesia have been overlooked. In fact, it is unlikely that any other account as complete as this has been written. Modern devices for producing anesthesia for thoracic surgery are reported in detail. There are illustrations and descriptions of devices from the United States, England, and other countries. A chapter develops the subject of tracheal and bronchial intubation and the control of secretions, with illustrations of almost all the devices, ancient and modern, that have been evolved for this purpose. Much space is given to bronchoscopy, and various lighted instruments for examination of the respiratory passages are depicted. Intratracheal tubes with inflatable cuffs, such as were used as long ago as 1893, are illustrated. A chapter is devoted to anesthetic agents and the absorption technique of general anesthesia. Appendix I is a copy of routine instructions for resuscitation as displayed in first aid boxes in Paris in 1822. Appendix II gives photographs of, and biographic notes on, 30 outstanding men who in the past have been instrumental in the progress made in thoracic anesthesia. Anyone interested in anesthesia for thoracic operations will find this book of value.

Extrasystoles and Allied Arrhythmias. By David Scherf, M.D., F.A.C.P., Associate Professor of Medicine, New York Medical College, New York, and Adolf Schott, M.D., M.R.C.S., Medical Officer in Charge of Cardiographic Department, Queen Mary's Hospital for East End, London. Cloth. $15.50. Pp. 531, with 213 illustrations. Grune & Stratton, Inc., 381 Fourth ave., New York 16, 1953.

This monograph dealing with the manifestations, significance, therapy, and mechanisms of ectopic impulse formation in the heart is the result of extensive experimental and clinical studies of old as well as more recent data. Following a unique historical review of the development of knowledge about cardiac irregularities in general is a systematic description of the many varieties of premature beats and of disturbances of rhythm caused by them. Special chapters deal with fibrillation and flutter of auricles and ventricles, with paroxysmal tachycardia, and with alternans of the heart. An exhaustive discussion of the role of nervous factors and of drugs and electrolytes in the formation and suppression of ectopic beats is included. A final section is devoted to the authors' concept of the mechanisms of ectopic impulse formation.

The careful reader will find in this book an interesting mixture of a well-rounded presentation of generally accepted principles together with an accumulation of data serving to support the one-sided viewpoints of the authors. This is reflected in the text as well in the selection of illustrations. A great deal of the latter are poor reproductions of previously published material. Many of the electrocardiographic tracings permit alternative interpretations, not mentioned by the authors, and some (fig. 39, 140, and 154) are apparently examples of misinterpretation. The elaborate diagrams on page 106 confuse rather than illuminate a simple concept. Inconsistencies become obvious when one tries to apply the definitions and criteria of the authors to some of the reproduced material. Thus, the proposed definition of an "extrasystole" fails in instances like figs. 125, 126 and 130, and the strict criteria for the diagnosis of retrograde P waves set forth on page 132 are not considered when the authors deal with their own material (fig. 104). The definition of "interference with dissociation" as contrasted to parasystole is inadequate and misses the point. Extensive reference is made throughout the book to previous publications of the authors and to neurophysiological data in the section on mechanisms, in order to fortify the concept of repetitive response to a single stimulus. The role of other possible mechanisms such as re-entry is minimized. The older bibliography is almost complete and summarized in an excellent manner. Quotations of more recent pertinent work are meager and obviously selected to fit the needs of the presentation. Thus, Rosenblueth's studies on circus movement in the atria are ignored. A discussion of the latter data could more appropriately fill the ample space devoted to a forced and unnecessary polemic concerning priority in the introduction of the aconitine method.

As a review of historical facts, a summary of older European work, and a reference book for clinical and therapeutic aspects of premature beats and associated disorders, this monograph is outstanding and therefore a most valuable addition to the library of any cardiologist, but, to gain more objective viewpoints on the still obscure mechanism of ectopic impulse formation, the reader should, in addition, consult the writings of other equally competent workers in the field.

Live and Help Live. By Ruth Goddard, Edwin D. Martin, and Lewis Spears. Cloth. $2.60. Pp. 306, with illustrations. Banks Upshaw & Company, 703 Browder St., Dallas 1, 1953.

Good, practical advice on safety practices is presented in this volume, which is directed at children in the upper grades of elementary schools. The language is appropriate to such groups, and the discussions are sufficiently concise to permit satisfactory assimilation of the presentations. An especially good feature is the inclusion at frequent intervals throughout the text of stimulating questions based on the topic under consideration. In addition to a general discussion of the many different special agencies responsible for community safety, there are chapters on home safety, school safety, first aid, safety in recreation and during vacations, and traffic safety.

The inclusion at the end of each chapter of a full-length 15-minute radio program that can be used for classroom discussion or for presentation over the school public address system deserves special mention. These programs were obtained from the Texas School of the Air and present the various topics in a lively, interesting manner that should insure added understanding and cooperation.

A Ciba Foundation Symposium: Visceral Circulation. Editor for Ciba Foundation: G. E. W. Wolstenholme, O.B.E., M.A., M.B. Assisted by Margaret P. Cameron, M.A., A.B.L.S., and Jessie S. Freeman, M.B., B.S., D.P.H. Cloth. $6.50. Pp. 278, with 72 illustrations. Little, Brown & Company, 34 Beacon St., Boston 6, 1953.

This volume consists of 25 short papers and informal discussions that constituted the 1951 Ciba Symposium on Visceral Circulation. The subjects discussed fall into four broad categories: visceral vascular architecture, general factors in blood flow regulation, regional blood flow regulation, and interaction of general and visceral circulations. Authorities in both preclinical and clinical sciences from the United States, Canada, Great Britain, Switzerland, Belgium, Sweden, Denmark, and Germany took part. In view of their specialized nature, these discussions will be of interest chiefly to the research worker.

Communicable Disease Control: A Volume for the Health Officer and Public Health Nurse. By Gaylord W. Anderson, M.D., D.P.H., Mayo Professor and Director, School of Public Health, University of Minnesota, Minneapolis, and Margaret G. Arnstein, R.N., M.P.H., Sc.D., Chief, Division of Nursing Resources, United States Public Health Service. Third edition. Cloth. $6.50. Pp. 500, with 8 illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1953.

This valuable book has previously received wide acceptance. In the third edition an attempt has been made to incorporate new knowledge and to remove that which is outdated, since the communicable diseases have declined in importance in the last 50 years because of the development of both new preventive and therapeutic measures. As the authors wisely point out, no modern health department program can be built around the communicable diseases. Nevertheless, a number of the infectious disorders still are not controlled. The first section of this book deals with the general problems of the infectious disorders, and the second section discusses these conditions specifically. Later chapters have to do with diseases spread through arthropods. Bibliographical material is attached to each section. Epidemiology is extensively discussed. This book will continue to be an extremely worth-while publication for students, nurses, physicians, and all those in the public health field.

Coroners in 1953: A Symposium of Legal Bases and Actual Practices. Paper. $2. Various pagination. National Municipal League, 299 Broadway, New York 7, 1953.

In 1941 the National Municipal League, the American Medical Association, the American Academy of Forensic Sciences, the American Bar Association, the American Judicature Society, and the National Civil Service League jointly published and sponsored a pamphlet entitled "A Model State Medicolegal Investigative System." That study outlined a model law and discussed the experience under a modern system such as exists in Massachusetts, Maryland, and Virginia. This new publication surveys the practical day-to-day functioning of existing coroner systems in 36 other states. It bases its contents on the answers to questionnaires sent to state universities, bureaus of governmental research, institutes of public service, individual coroners, individual medical examiners, and tax payers' alliances; the result is a valuable compendium of information about the office of coroner as it is currently administered. Any physician interested in improving the facilities for medicolegal investigations in his state will be rewarded by a study of this publication.

The Parietal Lobes. By Macdonald Critchley, M.D., F.R.C.P., Neurologist, King's College Hospital. Cloth. $13.50. Pp. 480, with 150 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Avenues, Baltimore 2; Edward Arnold & Co., 41-43 Maddox St., London, W.1, 1953.

This is an outstanding monograph describing in detail the structure, functions, and particularly the symptomatology of lesions of the parietal lobe. It has been prepared by one of the world's outstanding neurologists and is based not only on the international literature on the subject but also on the author's extensive experience. The first two chapters are concerned with the anatomy of the parietal lobe and experimental physiological observations. The remainder of the monograph is concerned with various aspects of parietal symptomatology. The book is well illustrated and has an extensive bibliography and an index. For years to come, this may well be the classical reference work on the parietal lobes. Photographs of 10 outstanding neurologists who have been interested in the parietal lobes are included.

QUERIES AND MINOR NOTES

PREVENTIVE MEDICINE FOR THE INDIVIDUAL

To the Editor:—*A couple, in their late 30's, want semiannual "complete examinations" for cancer protection and general preventive purposes. What constitutes ideal preventive medicine practice by today's standards?*

David R. Bryan, M.D., Stowe, Vt.

Answer.—A comprehensive history should be taken at each examination regarding any signs or symptoms showing departure from normal living conditions. In addition to her bimanual pelvic examination, the wife should have a cervical cell smear (Papanicolaou) test each time. If either is a heavy smoker, chest roentgenograms should be made at six-month intervals. These would also reveal tuberculosis and some forms of heart disease. All abnormal lung shadows necessitate identification. Annual rectal palpation of the prostate is good practice, even though the husband is not yet in the accepted "prostate age." If the semiannual urinalysis suggests the presence of sugar, a fasting blood sugar examination should be made. Any abnormal heart sounds should be identified by an electrocardiogram. Gastrointestinal symptoms necessitate x-ray examination. Any painless persistent lump in the breast or other soft tissue should be removed for microscopic examination. Any mole or wart subjected to repeated irritation or friction should be removed and microscopically examined, as should any wart or mole seen to be changing in size or color. A sore that does not heal in the time it should if due to injury, and especially if of painless character, should be biopsied. There should be no "watchful waiting" of any symptom the cause of which can be identified by the proper examination or test.

ENTEROBIASIS DURING PREGNANCY

To the Editor:—*A 26-year-old multigravida has had oxyuris vermicularis for more than a year that has been treated unsuccessfully with enteric-coated gentian violet tablets (Enseals), p-benzylphenyl carbamate, and enteric-coated diphenhydramine capsules (Benadryl Emplets). Her two children responded promptly to treatment. I have instructed her in hygienic routine to prevent reinfection. She is now three months pregnant. Since she has had three spontaneous abortions previously, I am afraid to give hexylresorcinol retention enemas, and this drug in my experience has been very disappointing when given orally. Do you have any suggestions?*

M.D., Tennessee.

Answer.—Oxyuris vermicularis infection or enterobiasis is persistent and difficult to cure under the best of circumstances. In the early months of pregnancy in a patient who has had spontaneous abortions, the problem is most difficult. Since the physician is reluctant to give hexylresorcinol by retention enema, it could be given orally. The dose is 1.0 gm. given in the form of hard coated tablets that should not be chewed. The drug should be given in the morning before breakfast. No food should be taken for at least four hours after therapy. A mild saline purge (sodium sulfate or phosphate but not magnesium sulfate) should be given four hours after the drug. Hexylresorcinol is contraindicated in the presence of ulceration of the stomach or bowel or in patients having gastroenteritis. All members of the family should be treated simultaneously. If, in the opinion of the attending physician, the condition of the patient will permit, a small cleansing enema of not more than 500 cc. of saline solution (0.9%) in which is suspended about 25 gm. of a synthetic detergent may be given. On alternate nights for a total of three times this may be repeated. As a further precaution against reinfection, the synthetic detergent should be used for cleaning all personal laundry, bed linen, bathrooms, and fixtures that may become contaminated throughout the home.

SMOKING AND DRINKING DURING PREGNANCY

To the Editor:—*How much nicotine does a fetus receive when the mother is a chain smoker? How much alcohol does a fetus receive when a mother drinks enough to be intoxicated each day?*

Leila D. Denmark, M.D., Atlanta, Ga.

Answer.—The amount of nicotine that the fetus receives when the mother is a chain smoker has not been determined. Some experimental studies have been carried out on animals that show that the stillbirth rate of animals exposed to cigarette smoke in the equivalent of 20 cigarettes per day was 10 times as great as that of the controls. Nevertheless, these results are not necessarily applicable to human subjects. Sontag and Wallace recognized that a consistent finding during human adult smoking was tachycardia. They felt that the fetal heart rate might be an index of the transmission of nicotine across the human placental membrane during maternal smoking. In nicely controlled observations before and during maternal smoking, they found an actual rise in the fetal heart rate. This change they felt indicated that the toxic products of smoke do pass through the human placenta and enter the fetal circulation. The rise in the fetal heart rate was similar to that produced during adult smoking, particularly in women who inhaled. Therefore, until further studies are carried out to show that excessive smoking is not harmful in pregnancy, it would be wise to advocate minimal, if any, smoking. It would be difficult to know how much alcohol is received by the fetus when a mother is intoxicated every day. Goodman and Gilman stated that alcohol differs from most foods in that it is unchanged in the intestines and is absorbed as such. All organs and fluids of the body contain alcohol within a few minutes after it is ingested. It also gains ready access to the fetal circulation. The distribution of alcohol in various tissues is fairly uniform.

USE OF ASCITIC FLUID

To the Editor:—*I hear that physicians in India are using ascitic fluid to inject into other patients intravenously. It is first autoclaved. What are the dangers? Could such fluid be stored? Our work is mostly charity work here. Very seldom does one get permission for a blood transfusion. Plasma is ordinarily not available, nor can we afford the expensive special solutions to take the place of these.*

H. E. Dester, M.D., India.

Answer.—Because of the excellent facilities for obtaining, processing, storing, and administering plasma and whole blood transfusions in this country, the necessity of using ascitic fluid has never arisen. Articles have appeared in European literature concerning this matter (Emmrich, R., and Fliege, H. J.: *Med. Welt.* **20**:931-933 [July 28] 1951; Arduini, V.: *Gior. clin. med.* **31**:885-894 [July] 1950). If ascitic fluid is withdrawn under sterile conditions from patients with cirrhosis not related to protozoal infestation, is added to the proper anticoagulant-preservative mixture, and is stored under the same conditions as whole blood (42 C) for a relatively short time (8 to 10 days), there should be no objection to its use when plasma and whole blood are not available. The blood serological test for syphilis of the donor should be negative, and the ascitic fluid should be similarly tested. Ascitic fluid will add protein, especially albumin, to an undernourished patient, and as far as is known, there are no noxious agents in ascitic fluid. Fluid with a specific gravity over 1.015 usually indicates a superimposed inflammation. Hemorrhagic ascitic

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The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

fluid may be due to septic or tuberculous peritonitis or to previous bloody taps, and should be discarded. Autoclaving will insure sterility. The dangers are related to lack of aseptic technique, possible unknown parasitic infestation in tropical countries, tuberculous infection, and undetected malignancy.

CELLULITIS AND LEUKEMIA

To the Editor:—*A 49-year-old man, who was apparently well and had been doing heavy manual labor for years on the same job, was struck on the shin with a piece of wood that broke the skin. In the next 10 days his leg became infected, swollen, and very painful, and he was hospitalized. In the meantime, he was treated with hot packs of magnesium sulfate and penicillin but failed to improve. Ten days later he was admitted to a hospital where a diagnosis was made, first of cellulitis and on the second day of myelogenous leukemia. The patient died 27 days later. Did this accident precipitate his death in any way?*

Charles Bate, M.D., Tulsa, Okla.

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—In the absence of information regarding either the clinical course of this patient during the last 25 days of his life or the postmortem findings, it is not possible to estimate the extent to which the injury and the infection that complicated it may have contributed to death. It is not clear whether death resulted from the spread of the infection of his leg, from leukemia, or from some entirely unrelated condition.

If the infection remained stationary or subsided and if death resulted from a rapid and overwhelming exacerbation of leukemia, there is no apparent reason to believe that the accident was causally related to death. In this connection consideration should be given to the possibility that the elevation in the leukocyte count that gave rise to the diagnosis of myelogenous leukemia was a leukemoid reaction to infection rather than to leukemia. A leukemoid reaction may simulate leukemia closely, with leukocyte counts in excess of 100,000, immature white blood cells, anemia, nucleated red blood cells, hemorrhage, splenomegaly, and lymphadenopathy (Krumbhaar). Thus if the patient did die of spreading infection with septicemia, he may have had a leukemoid reaction rather than leukemia. In that event, the accident that caused the infection should be regarded as the primary cause of death.

Still another relevant consideration concerns the possibility that the patient died of an infection that was caused by the accident and one to which the patient was abnormally susceptible by reason of an unsuspected, although already established, leukemia. It is a fact that apparently healthy persons may be found to have well-established leukemia. In such an event what are the chances that the leukemic person is hypersusceptible to infection? Certainly the ability of a person to resist infection depends to a considerable degree on the presence of normal myeloid tissue. Strumia and Boerner have shown that the more immature the granulocytes the less effective is their phagocytic activity. In the absence of normal myeloid tissue, resistance is greatly impaired (Jaffe). Thus it is possible that this man's death was due to the accident in that it resulted in an infection that he was unable to overcome because of his leukemic state. This possibility must be regarded as remote, since it is unlikely that he would be "apparently well" while suffering from such an advanced stage of leukemia. It probably could be equally well argued that the infection might be expected to improve or to cause a temporary remission in his leukemic state, since a number of such cases have been reported (Jaffe).

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Answer.—To answer this question more data would be desirable, including the results of bacteriological studies of the wound drainage and blood cultures, whether the leukemia was acute, subacute, or chronic granulocytic, and the results of a necropsy. From the data given, it seems probable that infection, which would not have occurred had there not been the accident, was the direct cause of death, and that the leukemia was a contributing cause of death by lessening resistance to infection. Certainly, the injury had nothing to do with the development of the leukemia. If at necropsy, death was found to be due to a major hemorrhage, leukemia was probably the chief factor. If death was due to the infection itself, the injury would appear to have been the major factor.

TUBERCULOUS PERITONITIS

To the Editor:—*A 7-year-old boy of nearly normal stature and weighing 25 kg. is suffering from tuberculous peritonitis. Is any new treatment known that would save his life?*

Ponteredra, Spain.

Answer.—Vigorous chemotherapy should be instituted promptly for the patient in question with (1) streptomycin, 0.75 gm. daily by intramuscular injection; (2) isoniazid, 100 mg. twice daily; and (3) sodium *p*-aminosalicylate, 8 gm. daily divided in two or three doses. The sodium *p*-aminosalicylate should be given only if the patient can tolerate this drug without serious gastrointestinal disturbance. If he responds well to the above treatment, the streptomycin should be reduced to two injections per week and the other drugs given in the same amounts daily. The treatment should be carried on without interruption for at least six months to one year. In any case, treatment should not be discontinued until several months after all evidence of disease has disappeared. A mixture of streptomycin and dihydrostreptomycin may be used in place of streptomycin alone to decrease possible toxic effects. Calcium *p*-aminosalicylate may be used instead of the sodium salt for the same reason. The doses of streptomycin and isoniazid may be increased by 25% or even 50% above those mentioned if the poor condition of the patient warrants maximum dosage. The prognosis of tuberculous peritonitis alone is not unfavorable, but in children it is frequently associated with dissemination of the disease, which makes the prognosis much worse. Even in disseminated tuberculosis in children, the prognosis is reasonably good provided vigorous chemotherapy is started before the patient is in a terminal condition.

HIRSUTISM AND SCANTY MENSTRUATION

To the Editor:—*A 35-year-old married woman had regular menstrual periods that were quite profuse until five years ago. Since then they have gradually decreased in amount until now they are scanty and irregular. Coincidentally with the decreased menses a profuse downy growth of hair has covered her face, and now some of the hairs are turning black. Are these events of endocrine origin? What therapy will clear up the hirsutism?*

M.D., California.

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—The increasing hirsuitism, together with the increasing scantiness of menstruation, suggests an adrenal causation. Since no mention is made of obesity or sterility or of large cystic ovaries, it is assumed they are not present, so that the Stein-Leventhal syndrome can be eliminated. Again, since there is no mention of defeminization symptoms such as regression of the breasts or complete amenorrhea or of such masculinization changes as deepening of the voice or hypertrophy of the clitoris, and since there is presumably no sign of an ovarian tumor, an arrhenoblastoma or other maculinizing ovarian tumor can scarcely be suspected. Because of the hypomenorrhea a basal metabolism determination would seem advisable, as there may be no connection between the menstrual scantiness and the hirsutism, but especially important would seem to be determination of the 17-ketosteroid excretion, pyelography, and possibly air injection x-ray studies in an effort to rule out adrenal structural lesions. However, in the commonest type of hirsutism all such studies reveal no abnormalities, the hair excess being apparently due to a functional disturbance of the still unknown cells concerned in hair growth and distribution but assumed to be located chiefly in the adrenal cortex. No hormonal therapy is effective in such cases, and reliance must be put on such cosmetic measures as electrolysis and depilatories, depending on the location and extent of the hairy overgrowth.

Answer.—It is impossible without further evidence to give definite answers to the questions that have been raised. A marked change in the character of the menstrual flow at the age of 35 years should be thoroughly investigated. The onset of scanty and irregular menstruation at this age in a woman who has previously had regular and profuse menstrual periods could be associated with a definite glandular change. It is important that the patient be carefully examined, with particular attention to the character of the hair growth and also careful examination of the clitoris to determine whether or not any increase in size has taken place. Several determinations of the 17-ketosteroid excretion should be carried out. If the figure is consistently high, it suggests the possibility of overproduction of androgen by the adrenal cortex or by the ovaries. The abdomen should be carefully examined to make sure that no tumor can be felt in the region of either kidney. A careful pelvic examination should be carried out to exclude the possibility of a tumor in the region of either ovary. Your attention is directed to reports that occur from time to time on the subject of hirsutism in the *Journal of Clinical Endocrinology and Metabolism.*

PREVENTION OF TETANUS

To the Editor:—*Recently I served as physician to an expedition into the wilderness area of Colorado. In view of the large number of horses employed, I was concerned about the possibility of tetanus. How long will tetanus antitoxin and tetanus toxoid remain serviceable without refrigeration? I tried keeping the vials in a thermos bottle full of cold water, but apparently the caps will not stand immersion safely.*

Robert O. Knox, M.D., Fort Logan, Colo.

Answer.—Tetanus antitoxin stored at 37 C loses little if any potency in a 12 week period, and after 12 months it still retains about 70% of its potency. Storage for 12 months at room temperature causes very little deterioration, since from 80 to 90% of the original potency remains after this period. Tetanus toxoid, both purified and crude, is comparatively stable. There is a tendency for the limit of flocculation values to decrease or disappear in from 6 to 12 months at 37 C, but animal tests indicate little if any decrease in potency. From a practical standpoint it would appear that either tetanus antitoxin or tetanus toxoid could easily be carried in a thermos bottle without liquid of any sort. This would protect them from extreme heat during the day and possibly also from freezing during the night. Although freezing does not harm tetanus antitoxin and probably does not cause deterioration of toxoids, it will disturb the alum-precipitated preparations so that uniform mixing is no longer possible.

CANCER AND PREGNANCY

To the Editor:—*A woman, aged 34, had a left radical mastectomy a year ago for an early cancer. She took the fact of her cancer extremely well until she found out that she is pregnant again. What can be done to reassure her?*

Walter Shifton, M.D., Albion, N. Y.

Answer.—There is no unanimity of opinion concerning the relationship of pregnancy and cancer of the breast. Many authorities believe that pregnancy stimulates the growth of an existing breast cancer or its metastases. Others think that the environment for cancer is improved by pregnancy but that there is no direct stimulation of cancer cells. Women who have had a cancer of the breast should probably be advised to avoid a pregnancy until sufficient time has elapsed to decrease the likelihood of recurrences. This patient should have a very careful examination, including a roentgenogram of the chest, to eliminate the possibility of recurrences and metastases. She should then be reassured that pregnancy will not stimulate the growth of a neoplasm after a successful mastectomy. Following delivery the engorgement of the remaining breast and lactation should be suppressed.

CERVICAL RIB WITH SYMPTOMS

To the Editor:—*A woman, aged 60, suffers from symptoms of a left cervical rib. About eight weeks ago, on the advice of a neurosurgeon, the anterior scalenus muscle was cut on the left side. This brought no relief. Should the left cervical rib be removed surgically? Is there any further medical treatment with hope of success? Should the brachial plexus be injected?* *Irving S. Snow, M.D., New York.*

Answer.—In doing scalenotomy for cervical rib, it is also necessary that the fibrous bands beneath the scalenus muscle be thoroughly dissected so that at the end of the operation the brachial plexus as well as the subclavian artery are thoroughly freed of all pressure. Actually resection of the scalenus muscle is only a preliminary step in this operation for symptom-producing cervical ribs. If the operation has been done in the manner described, then certainly the next step is to remove the cervical rib itself. This can be done either from the anterior or the posterior approach. This consultant prefers the anterior approach. No medical treatment is known that will offer any success in a case like this. Alcohol should never be injected into the brachial plexus for the relief of pain.

ASTHMA

To the Editor:—*An allergist has recommended three x-ray treatments one week apart for bronchial asthma for a 5-year-old child. What data if any do you have on such treatment for asthma?* *D. H. Ecke, M.D., Vandalia, Ill.*

Answer.—X-ray treatment for asthma was used as early as 1909 (Schilling, F.: *Lancet* 1:1780, 1909). In general the methods have included single and multiple doses, light to massive exposures, varying types of filtering, and exposure of various parts of the body, such as the mediastinum, lung parenchyma, spleen, and pituitary. The results are not phenomenal but may be helpful in some cases, particularly when the allergic approach and usual methods have failed. It would not be justified as the first therapeutic approach and particularly in a child 5 years old. The writer is referred to the following references for details:

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COMBINED INJECTIONS

To the Editor:—*It is often necessary to administer penicillin and tetanus to a child who has been injured. Can penicillin and tetanus be mixed in the same syringe? If so, what types of penicillin and tetanus can be mixed? Also, can penicillin and phenobarbital be mixed in the same syringe?*

M.D., Colorado.

Answer.—The inquiry does not specify whether it refers to active ("booster dose") or passive immunization. Nevertheless in either instance tetanus toxoid and penicillin or tetanus antitoxin and penicillin can be injected in the same syringe. Any form of penicillin (except penicillin in oil) intended for intramuscular injection could be used. Procaine penicillin would probably be selected. Penicillin and phenobarbital could also be combined in a syringe for injection if there was any proper reason for doing so.

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PATHOLOGY OF REGIONAL ILEITIS AND ULCERATIVE COLITIS

Shields Warren, M.D.
and
Sheldon C. Sommers, M.D., Boston

Clinically regional ileitis (cicatrizing enteritis) and *ulcerative colitis may be sufficiently similar to make distinguishing them difficult.* Many medical students and physicians evidently consider that the two diseases merge at the ileocecal valve and that a fair proportion of patients suffer from both diseases. Pathologically this is not true, since by gross and microscopic examination it is almost always possible to arrive at a definite diagnosis either of regional ileitis or of ulcerative colitis. The morphology of the two conditions is as different as syphilis is from gonorrhea. The pathological diagnoses of regional ileitis or ulcerative colitis have now been made over 300 times from surgical specimens in the laboratory of pathology, New England Deaconess Hospital, and a review of the findings may be useful in emphasizing the morphological distinctions observed.

Grossly, regional ileitis (cicatrizing enteritis) was restricted to the small intestine in about 85% of cases, and ulcerative colitis was confined to the large intestine in 66% of cases. In the other 15% of cases of regional enteritis the disease extended to the colon and was termed cicatrizing enterocolitis. Ulcerative colitis involved the ileum in 34%, producing ulcerative ileocolitis. Since the portions of bowel affected may overlap, it is certainly not possible to consider that colonic involvement excludes regional ileitis or that ileal disease rules out ulcerative colitis.

REGIONAL ILEITIS

Typically regional ileitis as first seen at operation or autopsy appears as a sharply demarcated markedly edematous thickening of intestine, from gray to red-purple in color, and with a stiff corrugated edematous thickening of the attached mesentery, which contains enlarged soft lymph nodes. The analogy to a rubber garden hose provides a useful mental image of involved intestine in which the diameter of the lumen and thickness of the wall come eventually to be about equal. Radiologically, the classic "string sign" is provided by a narrowed barium stream in the affected lumen, reflecting the edema and cicatrization of intestine. Fistula formation to body surfaces, between intestinal loops, or to other hollow viscera is not uncommonly associated. Fistulas may develop after an appendectomy performed in the acute stage of regional ileitis, and this operation is probably undesirable, since in the majority of cases acute ileitis appears otherwise to subside spontaneously.[1]

While regional ileitis usually affects a single intestinal segment in continuity, in a minority of cases, less than 10%, there are "skip areas" of involvement in the small and large intestines, between which grossly unchanged regions of intestine are found. The tendency appears to be for the disease to extend upward along the intestine. For total extirpation at surgery, the removal of sufficient uninvolved intestine proximal to the gross lesion is very desirable, since microscopic foci of disease may exist in intestine not yet altered in its naked-eye appearance. Otherwise clinical recurrence will be more likely. It is now recognized that occasionally regional ileitis may affect the duodenum, jejunum, and distal colon with or without typical localization in the terminal ileum.[2] Gastric localization has not yet been convincingly proved.

Microscopically it is now evident that the chief disease process in regional ileitis is a progressive granulomatous lymphangitis.[3] It affects and scleroses lacteals in the intestinal lamina propria immediately beneath the epithelium of intestinal glands, and similarly affects lymphatics in the intestinal submucosal, muscular, and subserosal layers (fig. 1 and 2). This obliterative lymphangitis is focal, with widely dilated segments of lacteals and lymphatics left between the sclerosed segments. The obliterative lymphangitis produces what is essentially an elephantiasis of the intestinal wall, mesentery, and regional lymph nodes. In its earliest stages proliferation and desquamation are noted among the endothelial

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From the Laboratory of Pathology, New England Deaconess Hospital, and the Department of Pathology, Harvard Medical School.

Read before the joint meeting of the Section on Gastroenterology and Proctology and the Section on Pathology and Physiology at the 102nd Annual Meeting of the American Medical Association, New York, June 4, 1953.

[1] Gatch, W. D.: in Textbook of Surgery, Christopher, F., editor, Philadelphia, W. B. Saunders Company, 194[illegible] 1025.

[2] Carlisle, J. C., and Judd, E. S., Jr.: Regional Enteritis Involving the Duodenum: Report of Case, Proc. Staff Meet., Mayo Clin. 27: 569 (Dec. [illegible]

[3] (*a*) Hadfield, G.: Primary Histological Lesion of Regional Ileitis, Lancet [illegible] (Oct. 7) 1939. (*b*) [illegible] S., and Sommers, S. C.: Cicatrizing Enteritis (Regional Ileitis) as Pathologic Entity: Analysis of 120 Cases, Am. J. Path. 24: 475 (May) 1948.

lining cells of lacteals and lymphatics, leading to the production of cellular masses that mechanically interfere with and obstruct lymph flow. Once obstruction has occurred, the plugged lymph vessel is further altered peripherally by further proliferation of mesenchymal cells and an infiltration by lymphoid and monocytic leukocytes, with formation of a tuberculoid granuloma. These tubercles may contain giant cells, usually of foreign body type, and they simulate tuberculosis sufficiently well to have caused regional ileitis to be considered "hyperplastic tuberculosis of ileum" for many years. However, caseous necrosis and acid-fact bacilli are not observed in regional ileitis. The granulomas include giant cells that contain granules reacting to Sudan stains for fat. Later the granulomatous tubercles of regional ileitis sclerose and hyalinize, but they do not tend to resolve and the normal lymphatic drainage is usually not reestablished.

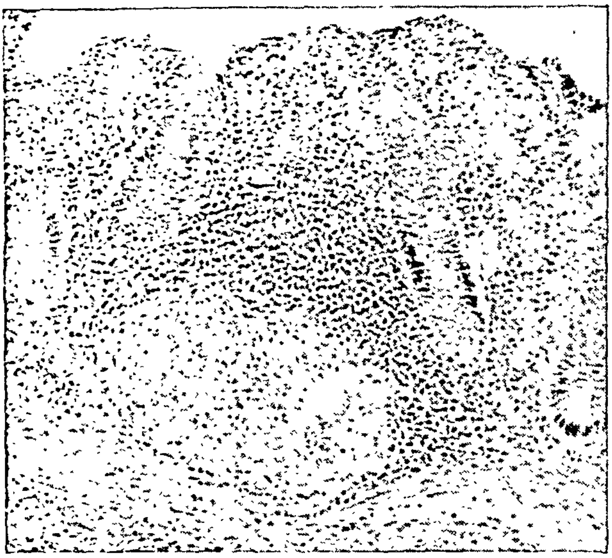

Fig. 1.—A granuloma of regional enteritis in the lamina propria just beneath the intact ileal mucosa. This is the initial stage of involvement of the intestinal wall (× 150, hematoxylin and eosin).

In the intestinal wall the prominent edematous and later cicatrizing appearances brought about by this granulomatous lymphangitis lead to variable mucosal ulcerations. One way in which ulcers are formed is through interference with the blood supply. All medium-sized arteries are surrounded by lymphatic spaces, and inflammatory obstruction and granuloma formation in periarterial lymphatics produce increased external pressure with narrowing or occlusion of arterial lumens, Also, perineural lymphatic involvement predisposes to nerve dysfunction, affecting local peristalsis.

Gross ulceration is not a uniform characteristic of regional ileitis. The intestinal mucosa as a rule appears reddened, swollen, and cobbled. The ulcers present may be concealed by overhanging edematous mucosa, often lie longitudinally along the side of mesenteric attachment, or may have a reticulated pattern. Once formed, secondary to changes in the intestinal wall as already described, ulcers inevitably become infected with enteric bacteria. Due to the abnormal environment of edematous cicatrization, these secondary ulcerations tend to persist, with undermining and formation of fistulous tracts or intramural abscesses.[4] The fistulization process progresses slowly, and perforation with peritonitis is very unusual, although intestinal adhesions and abscesses are frequently formed.

Microscopically, ulcer formation in regional ileitis is at first attended by an exudation predominantly of macrophages and eosinophils. This is also the type of leukocyte reaction characteristic of the few instances of acute regional ileitis studied pathologically. Later, with secondary infection, the leukocytic reaction is that of any banal acute or chronic inflammation.

The process of sclerosing granulomatous lymphangitis considered to be responsibile for regional ileitis is also found in the mesenteric lymphatics and regional lymph node sinusoids. On the mesenteric surfaces the tiny white granular nodules may be visible grossly. In regional lymph nodes tuberculoid granulomas (fig. 3) are also observed in from half to about three-quarters of cases, depending upon how diligently the lymph nodes are collected and examined.

Regional ileitis, although disabling, is not the cause of death often enough to allow the collection of much necropsy data. In those few cases studied at autopsy, beyond the involvement of intestine, mesentery and mesenteric lymph nodes, no related pathological lesions have been found except occasional similar granulomas in the liver.

It appears that regional ileitis is a pathological entity, as first pointed out by Crohn, Ginzburg, and Oppenheimer [5] over 20 years ago. Although regional ileitis is characterized by the formation of tuberculoid granulomas, it does not appear pathologically or clinically to merge with tuberculosis, sarcoidosis, Strongyloides infestation, or nonspecific ulcerative colitis.

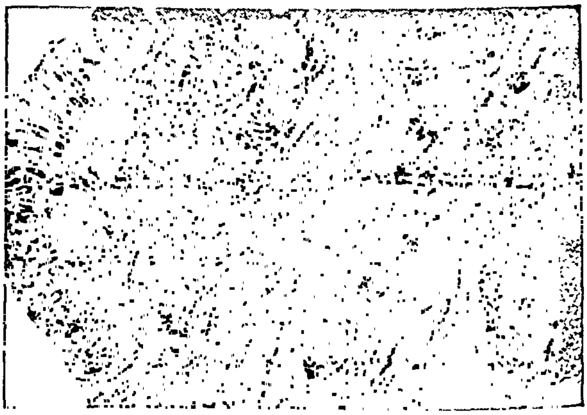

Fig. 2.—Typical granulomatous lymphangitis and perilymphangitis in the submucosa, intermuscular septa, and subserosa of ileum in regional ileitis (× 20, hematoxylin and eosin).

ULCERATIVE COLITIS

Ulcerative colitis may have a specific cause, such as amebiasis, bacillary dysentery, lymphopathia venereum, mercury poisoning, uremia, or vitamin deficiency. When such conditions have been eliminated, many cases remain with nonspecific cause. In one-third of such cases the process also involves the ileum, where it should not be confused with regional ileitis.

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[4] Rappaport, H.; Burgoyne, [illegible] and Smetana, H. F.: [illegible] of Regional [illegible]tis, Mil. S[illegible] 109: 463 (Oct.) 1951.

[5] Crohn, B. B.; Ginzburg, L., and Oppenheimer, G. D.: Regional Ileitis: Pathologic and Clinical Entity, [illegible] 1323 (Oct. [illegible]) 1932.

Grossly in the pathology laboratory it may be difficult to see any external abnormality in a resected specimen of ulcerative colitis. At operation an abnormal redness and spasticity of the colon may be present. The exaggerated spasm of colonic muscle leads to a loss of the normal haustrations. It partially accounts for the x-ray picture of a uniformly smooth lumen after barium enema, the so-called "lead pipe" colon of ulcerative colitis. From measurements of resected colons, it is also evident that scarring has contracted the colon's length by about one-third and contributed to the straightening and smoothing seen in ulcerative colitis on roentgenograms.

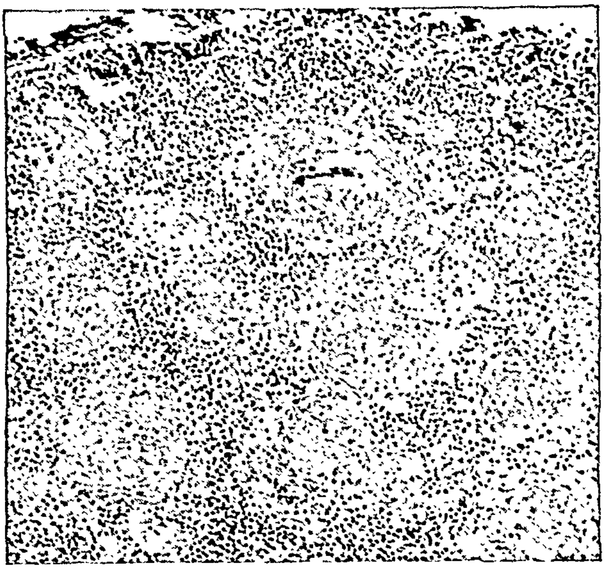

Fig. 3.—Lymph node from the mesentery in regional ileitis, demonstrating several granulomas, one with a giant cell (× 150, eosin methylene blue).

The most striking change in nonspecific ulcerative colitis involves the mucosal surface. The entire lining is often altered by diffuse severe processes of ulceration, inflammation, and congestion. Linear longitudinal ulcers extend along or between the tenial muscle landmarks, with cross-connecting ulcerated gutterings that together form a network. The mucosa between ulcerations is bright red or red-purple, with variable edematous swellings that may at times overhang and conceal the extensive ulcers. Sometimes the mucosa is denuded except for a few elevated persistent patches of residual epithelium, or elongated tags of inflamed mucosa may hang free except for narrow pedicles, forming pseudopolyps. If pseudopolyps remain attached at both ends, so-called mucosal bridges are produced, beneath and over which the abnormal fecal stream flows.

Ulcerative colitis tends to be a diffuse process without sharp discontinuities. Statistically in the material collected it involved the transverse, descending, and sigmoid colon in 80% or more of cases. The cecum, ascending colon, and rectum were diseased in from 60 to 75%. Ulcerative colitis restricted to the right side and with the unfortunate name of regional colitis was rare (1.7%).[6]

Microscopically, as grossly, the damage in nonspecific ulcerative colitis is severe but surprisingly superficial, being mainly restricted to the colonic mucosa and submucosa in most cases. This is unlike regional ileitis, it will be recalled, where the entire intestinal wall, regional lymph nodes, and mesentery are characteristically involved.

In about half of the ulcerative colitis cases studied, pathologically it has not been possible to find indications of the type of lesion originally responsible for ulceration. These indeterminate colitis specimens generally show only shallow mucosal ulcerations surrounded by acute and chronic inflammation, regeneration of mucous membrane, fibrosis and fatty infiltration of submucosa, and hypertrophy of the colonic muscular tissue, including the muscularis mucosae. In such cases examinations are usually made rather late in the disease and the process may be inactive. The inflammatory process is exudative and reparative, without any granulomatous tendencies, which is true of nonspecific ulcerative colitis as a whole.

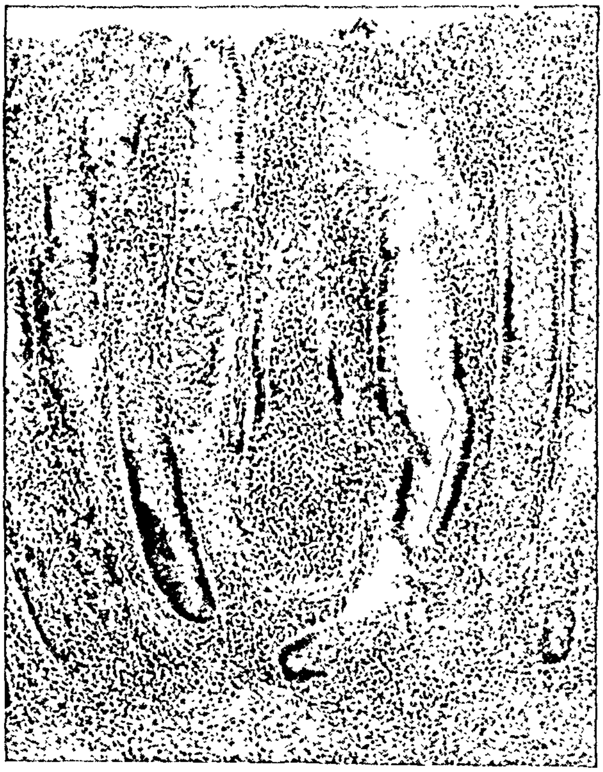

Fig. 4.—A mucosal crypt abscess, beginning to rupture into the colonic submucosa at its base. This is the earliest pathological lesion found in the commoner determinate variety of nonspecific ulcerative colitis (× 100, hematoxylin and eosin).

In another 40% of all nonspecific ulcerative colitis cases in which the evolution of the disease can be traced, an unusual primary localization of exudative inflammation is observed. The lesions begin with the collection of polymorphonuclear leukocytes within the bases of some of the colonic mucosal glands. Here in the mucosal crypts no epithelial abnormalities are found, and it appears that some characteristic of the mucus produced has attracted the leukocytes immediately after its secretion. However they may be attracted, polymorphonuclear leukocytes in any case crowd and distend a mucosal crypt until an abscess is formed within. The crypt abscess when it ruptures breaks at the base of the involved crypt, and the pus is discharged into the subjacent submucosa (fig. 4). Crops of crypt abscesses occur together, and their ruptures allow pus to dissect along and to separate portions of the mucosa from its blood supply, with resulting sloughing and ulcer formation. The microscopic alterations in developing crypt abscesses correspond closely to the gross sequences observed through the sigmoidoscope.[7]

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[6] Warren, S., and Sommers, S. C.: Pathogenesis of Ulcerative Colitis, Am. J. Path. 25: 657 (July) 1949.

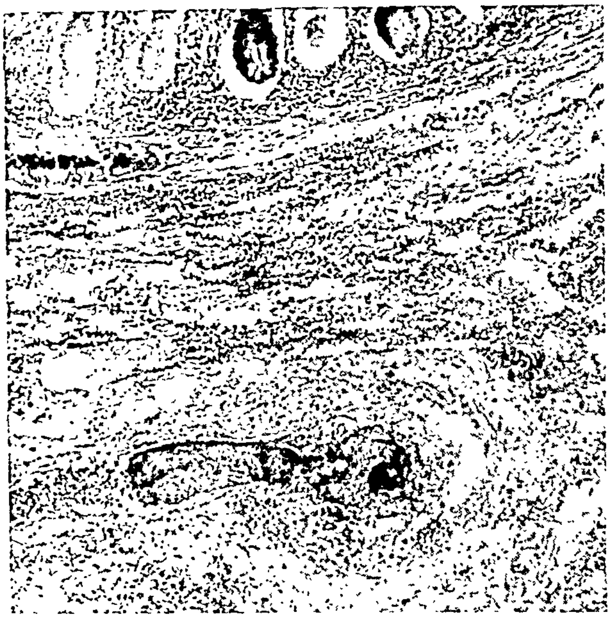

Fig. 5.—Vasculitis and thrombosis in a submucosal artery of colon, often associated with infarctive necrosis of almost the full thickness of colonic wall. Such localized vascular disease characterizes the less common more frequently fatal type of nonspecific ulcerative colitis (× 100, phloxine methylene blue).

Aside from inflammation and fibrosis in the adjacent submucosa and attempted regeneration by the uninvolved mucosa, there are no other important changes in the colonic wall. If one focuses only upon the muscularis and subserosal layers of a typical crypt abscess colitis specimen, it may be difficult to be certain of any abnormality. When ulcerative colitis involves the ileum, there is an associated lymphangitis, as occurs with inflammations elsewhere, but no granulomas are formed.

The regional lymph nodes in ulcerative colitis become hyperplastic and inflamed, but without any unusual changes. In cases of longer duration the protracted inflammation is followed by a fibrous thickening of the capsules of the regional lymph nodes. This is not specific, but it is a common finding with nonspecific ulcerative colitis, which, for instance, does not occur in regional ileitis.

In the remaining 10% of cases the nonspecific ulcerative colitis has been clinically severer and not infrequently lethal after relatively short periods of time, corresponding to the clinical condition called colitis gravis. Pathologically the gross ulcers in these cases tend to be larger, deeper, and more irregular. Microscopically the basis of these ulcerations is found to be an inflammatory necrosis of blood vessel walls, affecting arteries, veins or both, leading to vascular occlusions with infarction of a part or all of the adjacent colon (fig. 5). The blood vessel lesions resemble those in periarteritis nodosa, thromboangiitis obliterans, and related conditions. The combination of focal vascular disease with ulcerative colitis has been termed vasculitis colitis. About two-thirds of this group were included among the cases in which autopsies were done, indicating a higher mortality compared to crypt abscess colitis, in which a quarter of the cases were observed at autopsy, and indeterminate colitis, a third of which were observed at autopsy.[6]

In about 1% of pathologically studied instances, the same patient suffers from both regional ileitis and ulcerative colitis. Other conditions such as cholelithiasis, diabetes mellitus, or peptic ulcer also may be present. Such findings at present are best regarded as coincidental.

Nonspecific ulcerative colitis of any type is not uncommonly fatal. About 40% of the deaths have been due to perforation of the colon with peritonitis (fig. 6), and the other fatalities to a variety of toxic, infectious, or degenerative complications. In life ulcerative colitis is intermittently attended by numerous abnormalities in other body systems, such as arthritis, dermatitis, nephritis, thrombophlebitis, toxic hepatitis, and neuropsychiatric problems. Cancer of the colon may develop either from preexisting adenomatous mucosal polyps or from foci of regenerative epithelial hyperplasia, and this complication is an important practical problem clinically.[8] Pseudopolyps are by their nature not disposed to cancer formation.

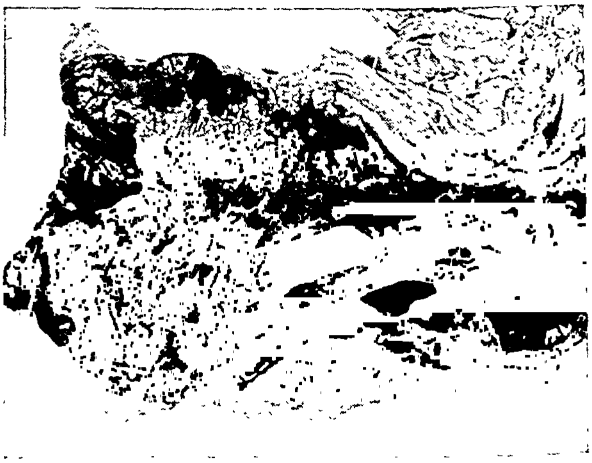

Fig. 6.—Multiple gross perforations of the sigmoid colon associated with a fulminating ulcerative colitis of short duration. Death was due to peritonitis. Vasculitis lesions were present.

COMMENT

The involvement of many organs and a study of the tissues from autopsies indicate that nonspecific ulcerative colitis is probably a disease of the whole body, with its most striking manifestation in the colon. This contrasts with regional ileitis, in which only intestine, mesentery, lymph nodes, and liver appear to be involved.

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Ulcerative colitis may also be a disease of enzymatic causation. Lysozyme cannot be held responsible, since its properties and the source in polymorphonuclear leukocytes argue convincingly that it is a concomitant of active inflammation, and not the cause.[10] While ulcerative colitis shares some properties and attributes of the so-called "collagen diseases," the analogy is not particularly close in most instances. It has not been possible by histochemical means to observe any characteristic deficiency in the mucosal basement membranes, an observation others have thought implicated crypt abscess colitis as a "collagen disease."[11]

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SUMMARY

The salient gross and microscopic pathological changes useful in the diagnosis and differentiation of regional ileitis and nonspecific ulcerative colitis are reviewed The two conditions are morphologically distinguishable, and they rarely coexist. In regional ileitis through a progressive sclerosing granulomatous lymphangitis, an edematous elephantiasic cicatrization of the entire intestinal wall, mesentery, and regional lymph nodes is produced. Ulcerative colitis is generally an exudative inflammatory condition mostly restricted in the colon to the mucosa and submucosa. It may be of indeterminate origin, or may arise by the submucosal coalescence of mucosal crypt abscesses or after intestinal infarction caused by necrotizing vasculitis. The involvement of many body systems suggests that ulcerative colitis may be a disease of the whole body. The etiological influences of disturbed lipid absorption metabolism in regional ileitis and proteolysis in ulcerative colitis are suggested as worthy of further investigation.

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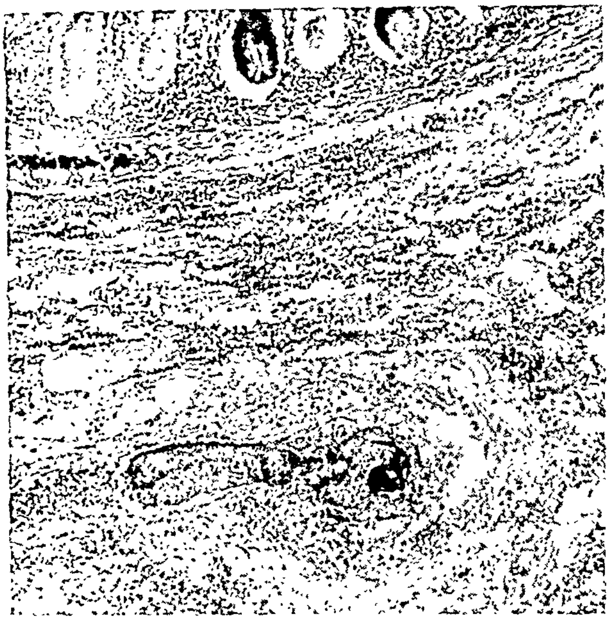

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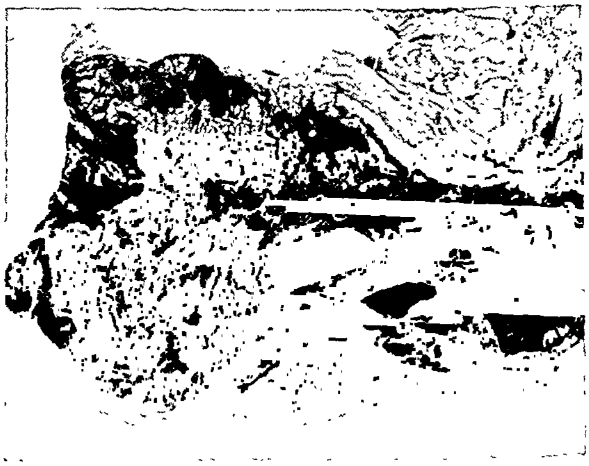

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Tannenberg and Pinner[3] report that atelectasis induced in rabbits is not automatically followed by bronchiectasis. In these two counterarguments, posture might be the differentiating factor. Many case histories point to pertussis or pneumonia accompanying measles as precursors of bronchiectasis. Atelectasis could easily be produced by mucous plug or lymph-node enlargement, and the interstitial infection associated with these childhood diseases could potentially damage the cilia and smooth muscle of the bronchus.

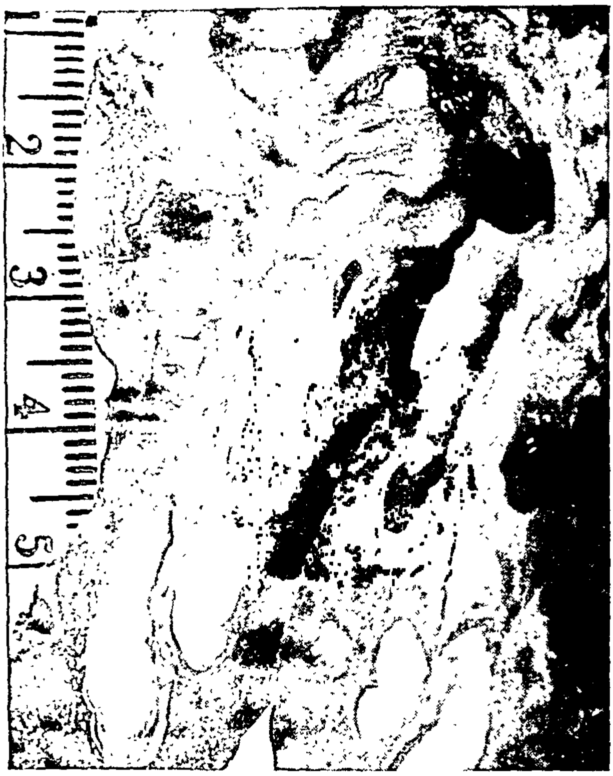

Fig. 1.—Inspissated material found in dependent bronchi. No tussic force can be applied behind such a mass, but bacillary culture may eventually liquefy the medium so that its expulsion becomes possible. Collections such as this are rarely, if ever, found in ascendant bronchi.

DIAGNOSIS AND TREATMENT

The most important step in the recognition of bronchiectasis is bronchography. This roentgenographic mapping of the bronchial tree with opaque medium is best done in the side position with adequate tipping of table and patient so that every bronchial orifice may be covered with a sufficient amount of medium for gravitational filling. Even done properly, there are too many variable factors for it to be an undisputed method of diagnosis. The presence of spasm or secretions, poor patient cooperation, and technical errors in anesthesia, oil administration, gravitational angulation or roentgenography may create misleading evidence. Also, especially in cases of long-standing asthma, there may be nonexcreting bronchi that show a purulent threat but in which there is no dilation. Etymologically, this condition must be [illegible] septic bronchitis, but the hazard is even more grave than that of septic bronchiectasis. Consequently, the interpretation of bronchograms can include demonstration of bronchial abnormality, but cannot always exclude its possible presence. The interpretation should be correlated with all the other significant material, and an objective evaluation should be made of the entire evidence. The patient's recognition of the location by pain, gravitational distress in turning from side to side, or his impression of source of bleeding must be recorded. The presence of rales or wheeze and any roentgenographic evidence of recurrent pneumonitis are added. Bronchoscopic examination may indicate from which side bleeding or excretion of purulent secretions may originate. If the severity of the symptoms warrants surgery, exploratory thoracotomy should be performed. At the time of operation any abnormality can be more closely mapped by palpation and demonstration of irregularities in aeration.

Although excision of the infected foci is the only cure for septic bronchiectasis, Alexander[4] points out several contraindications aside from those persons who will not submit to surgery: excisional therapy should be withheld from those with concurrent disease, limited pulmonary reserve because of associated emphysema, limited cardiovascular reserve, and too much or too little bronchial involvement. It must be remembered, however, that even a small focus of irreversible septic bronchiectasis may constitute a far greater threat to life than excision. Repeated sterilizations by antibiotics cannot alter the structural incubators, but continued antibiotic therapy may eventually provoke attacks by fungi or more virulent strains of bacilli.

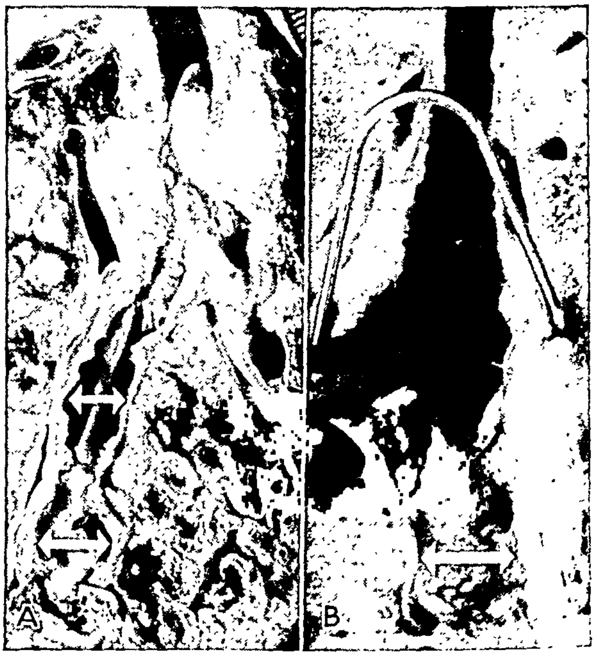

Fig. 2.—*A*, ectasia distal to an occluding carcinoma. *B*, ectasia distal to a block by foreign object.

In extensive cases with severe symptoms, careful functional studies should be performed before the pa-

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3. Tannenberg, J., and Pinner, M.: Atelectasis and Bronchiectasis: Experimental Study Concerning Their Relationship, J. Thoracic Surg. 11:571-616, 1942.

tients are denied surgery. Many will be found with sufficient reserve to tolerate operation. Whenever possible, the surgical program should be planned on a segmental basis to preserve functioning tissue. In bilateral cases, extirpation of the septic foci from the more involved side often will so alleviate symptoms that operation on the contralateral lung may be deferred. For those patients in whom only a palliative operation can be performed and for those in whom it is contraindicated, Badger[5] recommends a schedule of routine postural drainage and antibiotics when indicated. Denial of irritants, such as tobacco, is helpful.

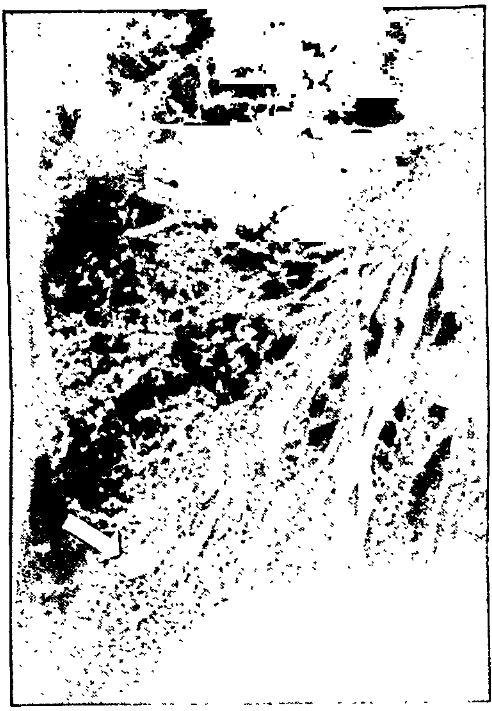

Fig. 3.—This septic focus, limited to a single bronchus, was sufficient to cause harassing symptoms of cough and production of purulent sputum.

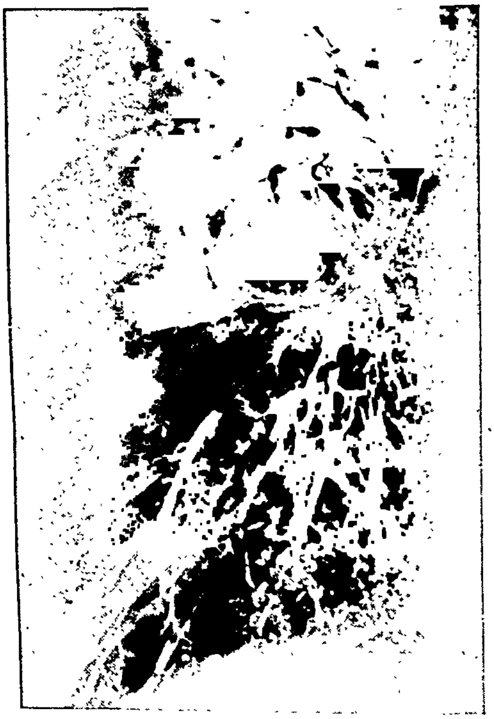

Fig. 5.—Bronchogram of a patient who had a 12 year history of asthma complicated by abnormal cough, hemoptysis, and production of purulent sputum. Although the bronchogram shows no dilation of bronchi, the bronchoscopic and clinical evidence implicated the dependent segments of the right lung. Surgical excision of these segments was the means of restoring this patient to complete, asymptomatic health.

SUMMARY AND CONCLUSIONS

Modern man's erect position is one of the prime factors in the establishment and maintenance of the sepsis of bronchiectasis. Atelectasis, especially when accompanied with interstitial involvement of the bronchial wall, may interfere permanently with the normal peristaltic and ciliary functions of excretion. Lack of excretory function in dependent bronchi must result in a reservoir that will collect and concentrate secretions. When such concentrated secretions become viscid, they often deny expulsion until the culture of bacilli liquefies the medium. During such periods of culture, each incubator represents a dangerous focus of infection maintained within the body. The only cure of septic bronchiectasis is excision. When surgery is absolutely contraindicated, postural drainage, respite from irritants, and intelligently applied antibiotics may palliate the disease.

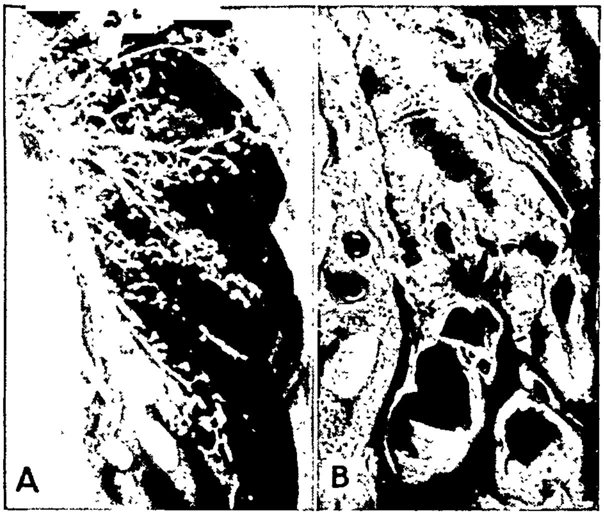

Fig. 4.—Appearance of severe septic bronchiectasis. *A*, left anterior oblique projection, with chronic pneumonitis, showing sacculation after injection of opaque media. *B*, surgical specimen (enlarged).

Bronchiectasis is a disease that presents several paradoxes. Widespread bronchial ectasia in one patient may produce few symptoms, whereas, conversely, another may have a limited septic focus (occasionally without demonstrable dilation) that causes crippling symptoms. Although there are several tests for the determination of the presence and extent of this disease, none are absolute, and decisions as to therapy must be the result

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4. [illegible], J.: Roles of Medicine and Surgery in Management of Bronchiectasis. Ann. Int. Med. 21: 565-579, 1944.

5. Badger, T.: Bronchiectasis: Treatment and Prevention. New England J. Med. 237: 937-944, 1947.

of objective evaluation of all evidence. The majority of patients with septic bronchiectasis present no great problem in diagnosis and treatment. In evaluation of the common case, usually there is well-defined roentgenographic evidence substantiated by the presence of strong clinical signs. There is, however, a smaller but significant group of patients with long-standing and distressing symptoms of pulmonary sepsis, but in whom the diagnostic evidence, both visual and clinical, is inconclusive or misleading. The obligation to help these unfortunate persons presents a real therapeutic challenge to the medical profession.

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SURGICAL MANAGEMENT OF TUMORS OF THE LUNG DISCOVERED IN X-RAY SURVEYS

Brian B. Blades, M.D., Washington, D. C.

The principles of the surgical management of lung tumors discovered in chest surveys are identical to those used for patients seeking medical attention because the disease causes symptoms. Abolition of the tumor before it reaches an inoperable state offers the only hope of cure or reasonable palliation. In a discussion of benign and malignant tumors discovered in x-ray surveys, one is probably expected to assume that these lesions have caused no symptoms. It should be recorded, however, that careful interrogation will sometimes reveal that the visit to the survey unit was stimulated by a worrisome cough. Interpreters of miniature films hold an inenviable position. Economy predicts speed, and since the x-rays are made primarily for the detection of tuberculosis, the lung apexes receive the most careful attention. It would be unreasonable to expect even the most skilled persons to approach perfection in interpretation of miniature films under the necessary conditions.

Guiss[1] found that in the mass roentgen survey of Los Angeles County, involving 1,867,201 patients, those with suspected tumors numbered 1.9 per 1,000 persons. Overholt and Woods[2] studied the results of a survey involving 7,892 persons. In 67 patients of this group who had exploratory operations for suspected tumors, 39, or 60%, had malignant lesions. It is of greater significance that in these patients who had asymptomatic tumors that were promptly explored, all lesions were amenable to operation and 70% had no evidence of lymphatic extension. These and other similar data prove the tremendous value of mass chest surveys in the detection of pulmonary neoplasms. The unobtainable figure of how many early cases that might have been obvious on standard size roentgenograms are missed on miniature films is an important consideration. Accurate detection of cancer of the lungs requires, ideally, full-sized, personalized roentgenograms twice a year.

INTERPRETATION OF X-RAY SHADOWS

There is only one reliable method to differentiate benign and malignant lung lesions, namely, microscopic examination of the tissue. Attempts to categorize the type of tumor on roentgen examination is neither reasonable nor desirable. The essential information is that there is an unexplained shadow in the lung fields that may be a tumor of any sort. In the patient with an asymptomatic lung tumor, the problem, therefore, resolves itself to the interpretation of x-ray shadows. These present different problems in differential diagnosis, depending upon their nature and location. There is no established roentgen pattern for lung tumors. Problems presented in chest surveys, however, may be grouped as follows: (1) coin shadows, (2) hilar enlargements, (3) atelectasis, and (4) a roentgen shadow that suggests pneumonia.

Coin Shadows.—Coin shadows in the lungs will usually represent either a tuberculoma or a lung neoplasm.[1] The possibility of metastatic lesions, however, must always be considered. The age of the patient will have some bearing on the prediction of the nature of the lesion. In patients 40 years old or younger, coin shadow is more apt to represent a tuberculoma. In patients over the age of 40, the incidence of neoplasms increases steadily. The presence or absence of calcium in the coin shadow helps in differentiating tuberculoma and tumor. The warning should be recorded, however, that, in a small percentage of lung neoplasms, hemorrhage with calcification or calcium deposits superimposed about the lesion may be misleading. Calcification, therefore, should not be considered completely diagnostic unless a pattern of laminated rings of calcium furnishes a typical picture of tuberculoma.

Tuberculomas are more apt to be situated near a pleural surface, either on the periphery of the lung or adjacent to an interlobar fissure. The location is suggestive, but it is not conclusive evidence concerning the nature of the mass. In the final analysis, there is only one reliable way to be certain of the nature of coin shadows that produce no symptoms, namely, excision and microscopic study of the tissue. Bronchoscopy rarely will be successful in establishing the diagnosis, and bronchial secretions, if negative, may be misleading.

Adenomas, xanthomas, and other less common lung tumors may have a clear-cut coin type of shadow on the roentgenogram. Speculation concerning the nature of the lesion is interesting but academic. Thoracotomy and excision and biopsy of the tissue are absolutely necessary in every case unless the lesion is clearly a well-developed calcified tuberculoma or the patient's general condition precludes exploration. The amount of lung tissue excised with the solitary coin lesion can only be determined after the diagnosis is established. Most surgeons use an initial wedge resection including a margin of healthy lung tissue

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From the Department of Surgery, the George Washington University School of Medicine.

Read in the Symposium on Modern Trends in [illegible] Surgery before the Section on Diseases of the Chest at the [illegible] Annual Meeting of the American Medical Association, New York, June 3, 1953.

[1] Guiss, L. W.: Value of Mass [illegible] Ray Survey Methods [illegible] of Cancer of Lung, New England J. M. [illegible]-555 (Oct.) 1951.

[2] Overholt, R. H., and Woods, F. M.: [illegible] Diagnosis in Treatment in Control of Lung Cancer, Cancer 5: 1035-[illegible] 1952.

to obtain material for biopsy. If the lesion is a solid tuberculoma without necrosis, this may be all that is necessary. Tuberculomas showing necrosis may require wider resection in the form of a lobectomy or segmental resection.

It is fallacious to predicate the necessity of exploratory thoracotomy on the size of the lesion seen in a roentgenogram. Arbitrary limitations of 1 or 1.5 cm. demanding attention should be discarded. Any persistent, unexplained lesion deserves immediate and aggressive investigation. If the tumor is a carcinoma that appears to be small and localized in a lobe, there might be some difference of opinion concerning the choice of lobectomy or total pneumonectomy. The consensus, however, is that unless the patient's general state of health precludes total lung resection it is the desirable operation. In cases in which the lesion is a bronchial adenoma, there is a sharp difference of opinion concerning the choice between lobectomy and total pneumonectomy. Advocates for the more radical procedure point out that adenomas can metastasize and that, in fact, they are malignant tumors. Surgeons who choose lobectomy for adenomas that appear to be confined to a lobe consider these lesions to be of low grade malignancy and believe the severer consequences of total pneumonectomy unnecessary to control the disease. The test of time and proper selection of cases are involved in finally answering this question.

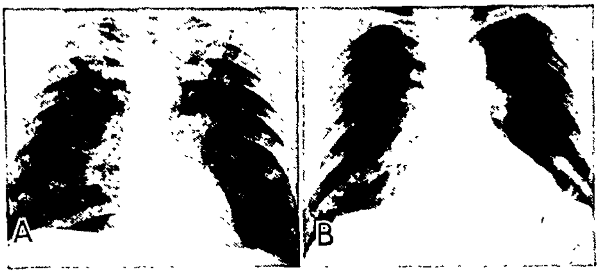

Fig. 1.—*A*, increased left hilar shadow of a 50-year-old man with a complaint of chronic cough and a questionable history of blood-stained sputum. Exploratory thoracotomy revealed enlarged hyperplastic lymph nodes. *B*, increased left hilar shadow of a 54-year-old man with a complaint of chronic cough. Exploratory thoracotomy revealed bronchogenic carcinoma.

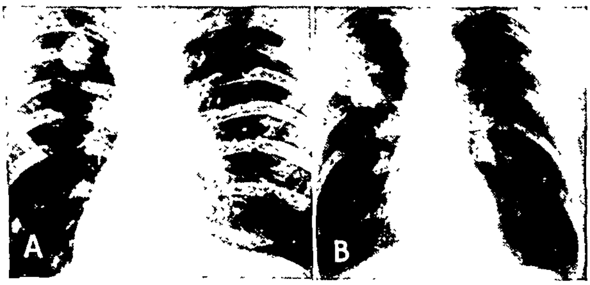

Fig. 2.—*A*, coin-type lesion discovered in an x-ray survey. The disease caused no symptoms and remained static for 18 months. There were metastases to pleura and rapid growth of the carcinoma two years after discovery. The patient died without exploration. *B*, 'lesion in the right upper lobe discovered six years before. The size of the shadow had increased slightly. The lesion was resected, but the patient died one year later of generalized metastases.

Hilar Shadows.—An enlarged hilar shadow detected in chest surveys may present problems that eventually require surgical exploration (fig. 1). This is particularly true if earlier roentgenograms are not available for comparison. In this connection, however, it is important to emphasize the indolence of some bronchogenic carcinomas. A coin shadow, an atelectatic shadow, or a hilar shadow may be present for many weeks or even years with no apparent change and later be demonstrated to be a lung cancer. It is becoming increasingly apparent, therefore, that the establishment of the presence of a lesion of the lung for extended periods of time will not necessarily rule out bronchogenic carcinoma (fig. 2).

Suspicious shadows at the hilum of the lung may be the result of enlarged mediastinal lymph nodes from tuberculosis, sarcoid disease, or inflammation of any type. Prominent blood vessels, usually the pulmonary artery, may mock neoplasms. In some instances, visualization of the blood vessels at the pulmonary hilum by angiocardiography will establish the diagnosis. Bronchoscopic findings are more apt to be positive in tumors producing the hilar type of shadow. Sometimes biopsy of the fat pad over the anterior scalenus muscle may reveal lymph nodes which contain metastatic tissue that will establish the true nature of the lesion. If, however, a satisfactory solution is not possible by these methods, exploratory thoracotomy should be recommended.

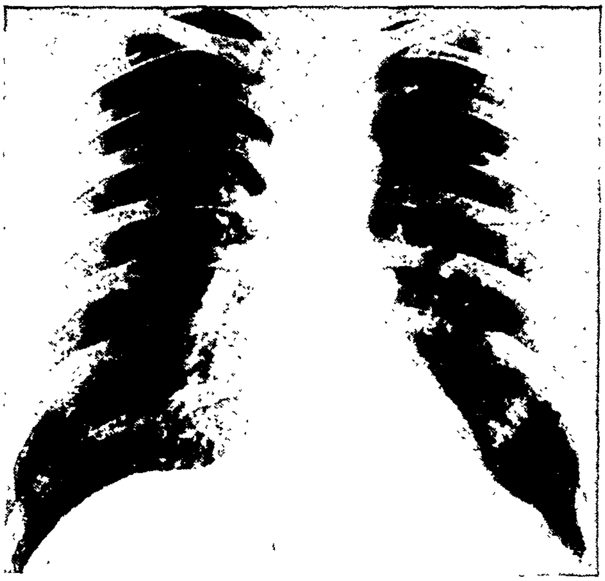

Fig. 3.—Atelectasis of the left lower lobe caused by lung cancer. This is a difficult lesion to detect on a miniature frontal projection.

Shadows of Atelectasis.—Atelectasis of the entire lung or a lobe will usually produce symptoms and sometimes give fair warning of the presence of a tumor. This, however, is not always the case. Segmental atelectasis is often silent, producing no symptoms and remaining unidentified until the disease progresses. Atelectasis of long duration or the creation of a ball valve effect in the bronchus by the lesion may result in marked emphysema of a lobe or lobes. This can be misleading and focus attention on the emphysema instead of the real cause, the cancer. The atelectasis of tuberculosis may mock carcinoma. Almost always, however, proper sputum examinations will reveal the presence of tubercle bacilli. Failure of lobar or segmental atelectasis to clear in cases of tuberculosis in which adequate antibiotic therapy has been instituted suggests the possibility that both carcinoma and tuberculosis are present. This is particularly true in the older age group patients.

Bronchiectasis and lung abscess may produce atelectasis that can be confused with neoplasms. Usually, however, these diseases have clinical manifestations that are suggestive and are not a prominent problem in cases considered because of findings on chest surveys. Lobar or segmental atelectasis in a retrocardiac position, particularly on the left, is difficult or impossible to detect on a single frontal projection. If minature roentgenograms are used, it is safe to predict that a great percentage of these lesions cannot be visualized or suspected. Both frontal and lateral projections on full-sized chest roentgenograms must be employed to demonstrate satisfactorily these lesions (fig. 3). In cases in which the entire lung or the lower lobes are atelectatic, bronchoscopy will often establish the presence or absence of a tumor. Lesions of the upper lobe are more difficult to visualize. Actually, the same principles apply to this group as the others; namely, after tuberculosis is ruled out, the diagnosis is lung tumor and exploration of the chest is mandatory.

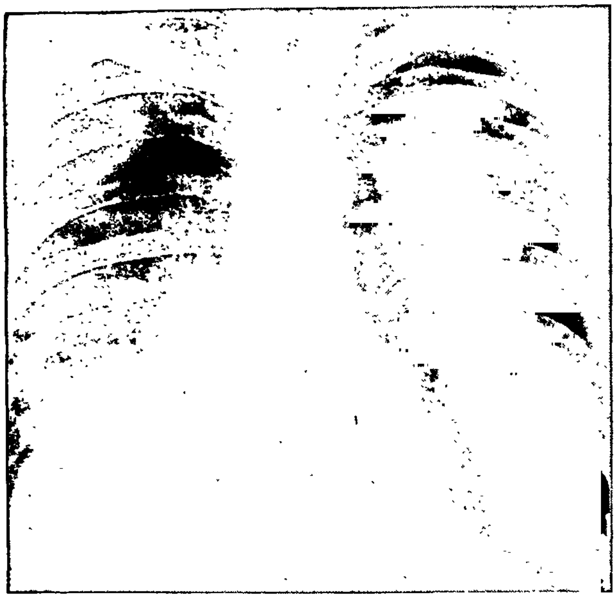
Fig. 4.—Roentgenogram of a patient treated for seven months with various antibiotics for pneumonia. Exploration revealed bronchogenic carcinoma.

Pneumonia-like Shadows.—The tendency of lung cancer to mock viral pneumonia is one of the most important single factors in delay of proper treatment. The pneumonia-like roentgenogram, plus low grade fever, are often the precursors of a long, varied, and ill-advised period of antibiotic therapy. More often than not in these cases there are associated clinical manifestations of disease, and this particular problem is not important in the management of asymptomatic tumor suspects (fig. 4).

SUMMARY AND CONCLUSIONS

Chest surveys for tuberculosis have resulted in the detection of a significant number of lung tumors throughout the United States. The use of miniature films and the speed of interpretation necessary to conduct these surveys are, however, handicaps in establishing the presence of early lung tumors. Biannual, full-sized roentgenograms of the chest, in both frontal and lateral projections, offer the best method for early detection of lung neoplasms. There is increasing evidence that not infrequently lung tumors remain indolent for months or even years. It should be emphasized, therefore, that a stationary, silent lesion that does not change in configuration during a period of observation does not rule out cancer of the lung. It is imperative to establish the exact nature by tissue diagnosis of every visible lung lesion. If other methods fail, exploratory thoracotomy should be recommended without hesitation.

901-23rd St., N.W.

MANAGEMENT OF KIDNEY INJURIES

Harry M. Spence, M.D., Sydney S. Baird, M.D.
and
Elgin W. Ware, M.D., Dallas, Texas

The purpose of this paper is to present a plan of management of kidney injuries that has been evolved from our experiences in civilian urologic practice. From an analysis of 66 cases and a review of articles in the recent literature, certain recommendations seem warranted.

When confronted with a patient who may have sustained trauma to the kidney, the initial problem is to determine whether the kidney actually has been injured. Significant pain or tenderness in the kidney area, gross hematuria, and/or a mass in the flank constitute presumptive evidence of kidney involvement, and if present it then becomes the duty of the physician to determine the extent of the injury. Once this has been ascertained, logical treatment may be started. Of paramount importance is knowledge of the status of the other kidney. It should be remembered that concomitant damage to other viscera, such as the liver, bowel, or spleen, as well as to the thorax, head, and extremities, may complicate the picture. In fact, these accompanying lesions may exceed in their immediate importance the damage to the kidney and may necessitate temporary deferment of urologic investigation, which should, however, be carried out as soon as practicable.

CAUSES AND TYPES OF RENAL INJURY

Although the anatomic position of the kidney affords it a certain degree of protection, the organ is by no means immune to injury in the form of external violence from

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From the urologic departments of the Dallas Medical and Surgical Clinic, Parkland Hospital, and Southwestern Medical School of the University of Texas.

Read in the Symposium on Injuries to the Urinary System before the Section on Urology at the 102nd Annual Meeting of the American Medical Association, New York, June 2, 1953.

falls and direct blows or from penetrating injuries, such as stab and bullet wounds. The occurrence of considerable damage from minor trauma to a kidney that is the seat of a preexisting disease process must also be borne in mind.

Obviously the nature and extent of the trauma largely determine the actual damage to the kidney. We utilize a simple clinical classification of renal injuries (after Sargent and Marquardt[1]) that divides them into three major groups. Group 1 consists of a simple contusion of the kidney, with or without minor parenchymal fracture. The clinical picture is that of pain of variable severity associated with gross hematuria of brief duration and essentially normal roentgen findings. In group 2, the pathological lesion is a major parenchymal fracture, often with rupture of the true capsule of the kidney and extravasation of blood and urine into the perirenal tissues. Patients with such lesions demonstrate localized pain and spasm, gross bleeding of variable duration, and frequently a mass, and, on urographic study, evidence of the parenchymal fracture and perirenal hematoma is seen. In group 3, the kidney is shattered. Roentgen studies show gross disruption of the normal architecture and particularly loss of recognizable pelvic structure. The clinical picture here is similar to that in group 2, except that the signs and symptoms of severe blood loss are more marked.

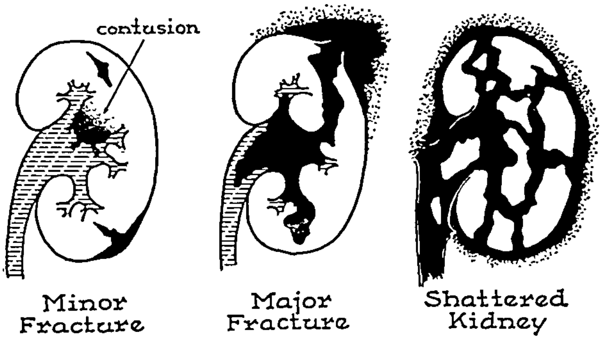

Fig. 1.—Diagram showing three types of kidney injuries.

These types of damage are shown diagrammatically in figure 1. As will be brought out later, both excretory urograms and retrograde pyelograms may well be necessary to classify accurately the injury in any given case.

DIAGNOSIS

When the history and physical examination indicate the existence of a kidney injury, roentgenographic studies are essential to determine its nature and extent, as well as the status of the opposite kidney. While a plain film may give some clue, it should be combined with pyelography as soon as possible.

Although opinions concerning the value of intravenous pyelography vary, we are convinced that it should be the first step in the urologic examination proper. Granted that it may be inadequate and disappointing in any given case, still it frequently furnishes all the information necessary for making an accurate diagnosis, and in such an instance no further urographic studies need be done. This is particularly true of group 1 lesions. The virtues of intravenous pyelography include its ease of execution and avoidance of the necessity for cystoscopy. It can be relied on to demonstrate satisfactorily the uninjured kidney in a high percentage of cases. (Orkin[2] estimates a percentage of 97.) Furthermore, it may be repeated at periodic intervals to check the progression or resolution of the pathological process, and this may even be carried out at the bedside using the Lysholm or Camp grid and portable x-ray machine as described by Orkin.[3] While excretory urography is usually considered futile in the presence of shock, we have frequently been surprised at the excellent visualization obtained in patients with marked hypotension. It should be remembered that nonfunction on the initial excretory urogram does not necessarily imply serious damage. In essence then, we regard the excretory urogram as a valuable screening procedure with which to start the examination.

If the results of intravenous pyelography are inconclusive and leave doubt as to the course to be followed, we advocate the use of retrograde studies without hesitation or undue delay. Unquestionably this method will delineate the structural damage more distinctly than the excretory method in most cases. In our experience possible complications such as infection and aggravation of bleeding have not constituted serious problems.

TREATMENT

As one reads the literature on the treatment of kidney injuries, he is struck by the divergence of opinion among acknowledged authorities. One school of thought, led by Sargent,[1] feels that nonoperative treatment, except in rare instances, yields superior results. On the other hand. Lowsley and Menning,[4] Bell,[5] McKay, Baird, and Lynch,[6] and others believe that early surgical intervention is the treatment of choice, because it results in the salvage of more kidneys and shortens the patient's morbidity. Our own experiences tend in general to support the view of the former group; however, when certain complications develop, which we regard as operative indications, nothing is to be gained by conservatism.

The rationale of conservative treatment lies in the fact that bleeding from the injured kidney tends to be self-limited. This is due to the tamponade effect of the true renal capsule, if the rupture is intracapsular, and of Gerota's fascia, if it is extracapsular. Here nature has provided an effective method for the control of hemorrhage in contradistinction to tears of the liver or spleen, where fatal intra-abdominal bleeding may ensue unless immediate surgical intervention is carried out. The effectiveness of this tamponade effect can be appreciated when, on surgical exposure of a ruptured kidney within a few hours or even within the first few days after injury, evacuation of the clot may be followed by such brisk renewal of the hemorrhage that rapid nephrectomy becomes mandatory.

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1. Sargent, J. [illegible] Marquardt, C. R.: Renal Injuries, J. Urol. 63: 1-8 (Jan.) [illegible]

2. Orkin, L. A.: [illegible] ation of Merits of Cystoscopy and Retrograde Pyelography in Management of Renal Trauma, J. Urol. 63: 9-24 (Jan.) 1950.

3. Orkin, L. A.: Bedside Urological X-ray Examination of Severely Injured Patient, Surg., Gynec. & Obst. 94: [illegible] 702 (June) 1952.

4. Lowsley, O. S., and Menning, J. H.: Treatment of Rupture of Kidney, J. Urol. 45: 253-271 (March) 1941.

5. Bell, E.: Traumatic Rupture of Kidney, South. M. J. 42: 141-144 (Feb.) 1949.

6. McKay, H. W., Baird, H. H., and Lynch, K. M., Jr.: Management of Injured Kidney, J. A. M. A. 141: 575-581 (Oct. 29) 1949.

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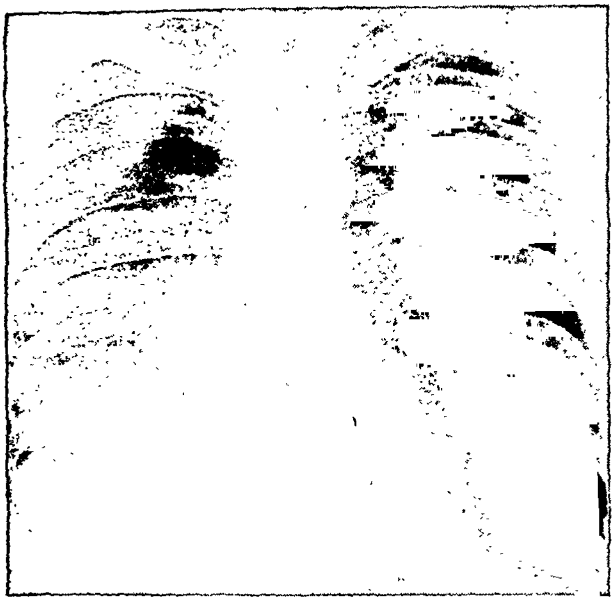

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From the urologic departments of the Dallas Medical and Surgical Clinic, Parkland Hospital, and Southwestern Medical School of the University of Texas.

Read in the Symposium on Injuries to the Urinary System before the Section on Urology at the 102nd Annual Meeting of the American Medical Association, New York, June 2, 1953.

falls and direct blows or from penetrating injuries, such as stab and bullet wounds. The occurrence of considerable damage from minor trauma to a kidney that is the seat of a preexisting disease process must also be borne in mind.

Obviously the nature and extent of the trauma largely determine the actual damage to the kidney. We utilize a simple clinical classification of renal injuries (after Sargent and Marquardt [1]) that divides them into three major groups. Group 1 consists of a simple contusion of the kidney, with or without minor parenchymal fracture. The clinical picture is that of pain of variable severity associated with gross hematuria of brief duration and essentially normal roentgen findings. In group 2, the pathological lesion is a major parenchymal fracture, often with rupture of the true capsule of the kidney and extravasation of blood and urine into the perirenal tissues. Patients with such lesions demonstrate localized pain and spasm, gross bleeding of variable duration, and frequently a mass, and, on urographic study, evidence of the parenchymal fracture and perirenal hematoma is seen. In group 3, the kidney is shattered. Roentgen studies show gross disruption of the normal architecture and particularly loss of recognizable pelvic structure. The clinical picture here is similar to that in group 2, except that the signs and symptoms of severe blood loss are more marked.

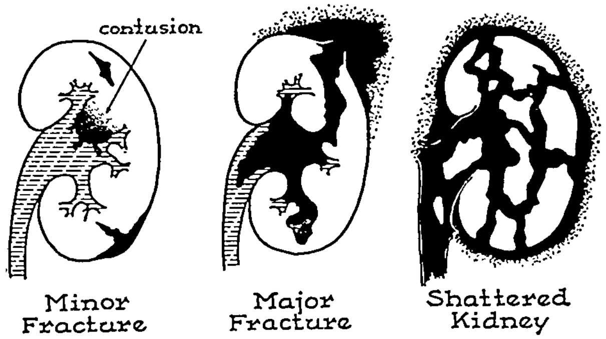

Fig. 1.—Diagram showing three types of kidney injuries.

These types of damage are shown diagrammatically in figure 1. As will be brought out later, both excretory urograms and retrograde pyelograms may well be necessary to classify accurately the injury in any given case.

DIAGNOSIS

When the history and physical examination indicate the existence of a kidney injury, roentgenographic studies are essential to determine its nature and extent, as well as the status of the opposite kidney. While a plain film may give some clue, it should be combined with pyelography as soon as possible.

Although opinions concerning the value of intravenous pyelography vary, we are convinced that it should be the first step in the urologic examination proper. Granted that it may be inadequate and disappointing in any given case, still it frequently furnishes all the information necessary for making an accurate diagnosis, and in such an instance no further urographic studies need be done. This is particularly true of group 1 lesions. The virtues of intravenous pyelography include its ease of execution and avoidance of the necessity for cystoscopy. It can be relied on to demonstrate satisfactorily the uninjured kidney in a high percentage of cases. (Orkin [2] estimates a percentage of 97.) Furthermore, it may be repeated at periodic intervals to check the progression or resolution of the pathological process, and this may even be carried out at the bedside using the Lysholm or Camp grid and portable x-ray machine as described by Orkin.[3] While excretory urography is usually considered futile in the presence of shock, we have frequently been surprised at the excellent visualization obtained in patients with marked hypotension. It should be remembered that nonfunction on the initial excretory urogram does not necessarily imply serious damage. In essence then, we regard the excretory urogram as a valuable screening procedure with which to start the examination.

If the results of intravenous pyelography are inconclusive and leave doubt as to the course to be followed, we advocate the use of retrograde studies without hesitation or undue delay. Unquestionably this method will delineate the structural damage more distinctly than the excretory method in most cases. In our experience possible complications such as infection and aggravation of bleeding have not constituted serious problems.

TREATMENT

As one reads the literature on the treatment of kidney injuries, he is struck by the divergence of opinion among acknowledged authorities. One school of thought, led by Sargent,[1] feels that nonoperative treatment, except in rare instances, yields superior results. On the other hand, Lowsley and Menning,[4] Bell,[5] McKay, Baird, and Lynch,[6] and others believe that early surgical intervention is the treatment of choice, because it results in the salvage of more kidneys and shortens the patient's morbidity. Our own experiences tend in general to support the view of the former group; however, when certain complications develop, which we regard as operative indications, nothing is to be gained by conservatism.

The rationale of conservative treatment lies in the fact that bleeding from the injured kidney tends to be self-limited. This is due to the tamponade effect of the true renal capsule, if the rupture is intracapsular, and of Gerota's fascia, if it is extracapsular. Here nature has provided an effective method for the control of hemorrhage in contradistinction to tears of the liver or spleen, where fatal intra-abdominal bleeding may ensue unless immediate surgical intervention is carried out. The effectiveness of this tamponade effect can be appreciated when, on surgical exposure of a ruptured kidney within a few hours or even within the first few days after injury, evacuation of the clot may be followed by such brisk renewal of the hemorrhage that rapid nephrectomy becomes mandatory.

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1. Sargent, J. [illegible] Marquardt, C. R.: Renal Injuries, J. Urol. 63:1-8 (Jan.) 1[illegible]

2. Orkin, L. A.: [illegible]ation of Merits of Cystoscopy and Retrograde Pyelography in Management of Renal Trauma, J. Urol. 63:9-24 (Jan.) 1950.

3. Orkin, L. A.: Bedside Urological X-Ray Examination of Severely Injured Patient, Surg., Gynec. & Obst. 94:[illegible] 702 (June) 1952.

4. Lowsley, O. S., and Menning, J. H.: Treatment of Rupture of Kidney, J. Urol. 45:253-271 (March) 1941.

5. Bell, E.: Traumatic Rupture of Kidney, South. M. J. 42:141-144 (Feb.) 1949.

6. McKay, H. W., Baird, H. H., and Lynch, K. M., Jr.: Management of Injured Kidney, J. A. M. A. 141:575-581 (Oct. 29) 1949.

The ability of the body to reabsorb extravasated fluids is well known and constitutes an additional basis for conservatism in the case of perirenal effusion. We have found that drainage of such a process is rarely necessary in the absence of sepsis. Many times we have been surprised at the prompt recovery with only supportive measures of a patient originally considered to be gravely injured. Furthermore, if any of the indications for operation become manifest, no harm results from watchful waiting.

We define conservative treatment as consisting of measures to combat shock, strict bed rest, administration of antibiotics, and repeated careful observation with special attention to pulse and blood pressure determinations, abdominal palpation, and the amount and character of the urine. An indwelling urethral catheter facilitates the latter. The possibility of continued bleeding requires repeated hemoglobin determinations and red blood cell counts, and any appreciable loss must be replaced by adequate transfusion of whole blood. Administration of antibiotics is routine, and these are best given parenterally for the first few days when ileus may be present. Distention is an indication for gastric suction.

In the majority of our cases, we have found the response to this regimen favorable, and it is continued with such individual modification as necessary until convalescence has been well established. It is then that follow-up intravenous pyelograms are most useful, and when needed supplementary retrograde pyelograms can be done with impunity.

OPERATIVE TREATMENT

While up to this point we have stressed the efficacy of conservatism, obviously some cases will present complications requiring surgical intervention. The most urgent indication for operation is persistent or recurrent massive hematuria. While rarely encountered, truly uncontrollable hemorrhage, such as is seen with a shattered kidney (Sargent's group 3), is a prime indication for immediate exploration. This condition is manifested by unrelenting shock and rapid progressive increase in size of a mass in the flank. Although in this situation a fatal outcome may be inevitable, a speedily performed operation may be lifesaving.

A second indication for operation is failure of resorption of an uninfected hematoma with urographic studies showing substantial damage to the kidney. In some of these cases, nephrectomy is necessary; however, occasionally a sheared or devitalized pole may be removed, saving [illegible] of functioning renal tissue.

Probably the commonest complication demanding operation is the development of sepsis in the area of extravasation. When a conservative course is decided on, extravasation per se is not an indication for operation. The use of antibiotics may well prevent infection and allow a smooth convalescence with complete resorption of the extravasated material. On the other hand, when infection supervenes as characterized by fever, leukocytosis, and increasing tenderness, surgical drainage is in order. Drainage alone is usually adequate; the kidney itself need not be disturbed.

Preexisting renal disease, evidenced by hydronephrosis, stone, cystic disease, and tumor may render the occurrence of the aforementioned complications more likely, even after a degree of trauma that would not affect a normal kidney. In addition, such lesions in themselves may warrant operation, preferably as an elective than as emergency procedures. In these cases, the trauma itself may represent a fortunate occurrence, inasmuch as it brings to light a hitherto unsuspected pathological lesion.

ANALYSIS OF SERIES

Statistical Data: The statistical data in this report include 66 cases of renal injury seen in the past 10 years. Fifty-four are from the surgical and urological services of Parkland Hospital, and 12 are from our private practice. There were 47 males and 19 females. The age range was from 1 to 67 years, with an average of 30 years. Nine were children under 12 years of age. The right kidney was involved 31 times and the left 32 times (3 unspecified).

The causes of injury and classification as to extent are shown in the following tabulation:

	No. of Cases
Causes of Injury	
Direct blow to kidney area	22
Gunshot wounds	19
Car wrecks	14
Falls	6
Stab wounds	4
Aircraft accident	1
Classification of Injury	
Contusion or minor laceration (group 1)	25
Major laceration (group 2)	36
Shattered kidney (group 3)	5

In four cases, major disease obviously antedated the injury (hydronephrosis due to ureteropelvic junction obstruction three cases and hemorrhage into simple cyst one case). One patient was found to have a congenital solitary kidney.

Treatment and Results.—Twenty-one patients were admitted directly to the surgical service and immediate laparotomy performed with the renal injury being either unsuspected or overshadowed by signs of intra-abdominal hemorrhage or perforation of a viscus. In 16 of these, a gunshot wound was the causative agent, 2 were results of stab wounds, and 3 followed automobile accidents. Twenty recovered and one died of a cerebral vascular accident four days after operation. Nine patients had perforation of the stomach or intestines, 10 had perforations or laceration of the liver, and 3 had ruptured spleens that were removed.

In 16 of the 21 patients undergoing exploratory laparotomy as an emergency, the injured kidney was preserved and the perirenal space drained at the conclusion of the intra-abdominal procedure. All did well except one in whom a subsequent nephrectomy for secondary hemorrhage was necessary three weeks after the original operation. In 5 of the same 21, primary nephrectomy was carried out at the initial operation because of the severity of the hemorrhage from the kidney or because, in the operator's words, the kidney was "shattered." The presence of an opposite kidney was determined by palpation only. All five recovered. Certainly even an emergency nephrectomy if the patient has not had the benefit of previous urologic study of the opposite side is undesirable, as attested by case reports in the literature of removal of a solitary kidney for trauma.[7] Critical review of the above cases, however, reveals that the exigencies of the moment warranted the decision.

Of the 45 patients remaining to be discussed, 3 were in critical condition, with multiple compound fractures predominating the clinical picture. All died with no definitive treatment being possible, At autopsy significant damage to the kidneys was found in each, but this could in no way be considered the primary cause of death. While strictly speaking, these three patients were treated conservatively, anything done for them represented little more than a gesture.

There are left then 42 patients in whom planned conservative treatment was embarked upon by choice. In 33, or 79%, of these a satisfactory result was obtained by such measures alone. A number have had normal follow-up pyelograms months or years after their injury, and, while many have been lost track of, the clinical impression when they were last observed was that a favorable result might reasonably be anticipated. One patient, while asymptomatic, had a nonfunctioning cystic kidney containing stones and is classed as a poor result.

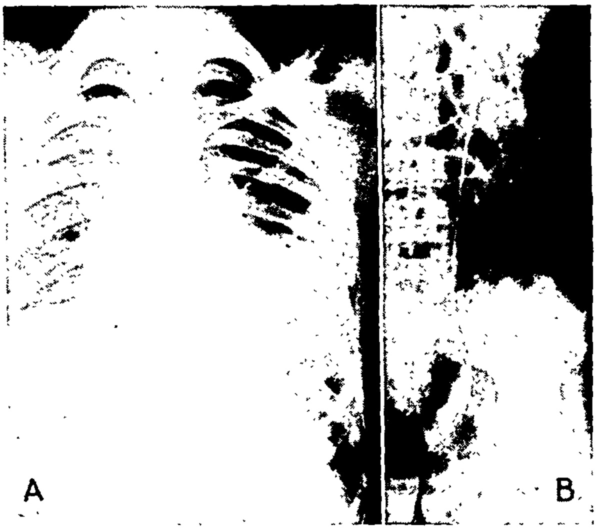

Fig. 2 (case 1).—*A*, elevated diaphragm on left side caused by subphrenic accumulation, and, *B*, extravasation of dye at upper pole of kidney after stab wound.

In 8 (19%) of the 42 patients initially considered suitable for conservative management, some complication became evident indicating operation. Three cases of preexisting hydronephrosis due to ureteropelvic obstruction required nephrectomy. In another patient, nephrectomy was done with a preoperative diagnosis of tumor, and a cyst with hemorrhage into it was found. In the remaining four cases, drainage of an infected perinephric extravasation was performed with accompanying partial nephrectomy in three instances.

REPORT OF CASES

Case 1.—A 23-year-old man was seen shortly after sustaining a stab wound in the lower left side of the chest in the midaxillary line. The urine was grossly bloody. A film of the chest showed marked elevation of the left leaf of the diaphragm, interpreted as being due to a subphrenic accumulation of blood (fig. 2*A*). Retrograde pyelogram made the day after admission demonstrated extravasation of the contrast material about the upper pole of the kidney (fig. 2*B*). The patient remained afebrile; his clinical symptoms cleared rapidly on conservative measures; and he was discharged in one week asymptomatic.

Case 2.—A 50-year-old railroad worker was thrown from a handcar and sustained an injury to the right flank region. On admission, a mass was palpable in the right flank and the urine was grossly bloody. The patient was treated conservatively and followed with retrograde pyelograms. The initial pyelogram showed marked extravasation of dye in the region of the lower pole of the kidney (fig. 3*A*). It was felt that operation would probably be required; however, the hematuria subsided and the mass disappeared. Retrograde pyelograms made four and one-half months after the injury showed a remarkable return to normal (fig. 3*B*).

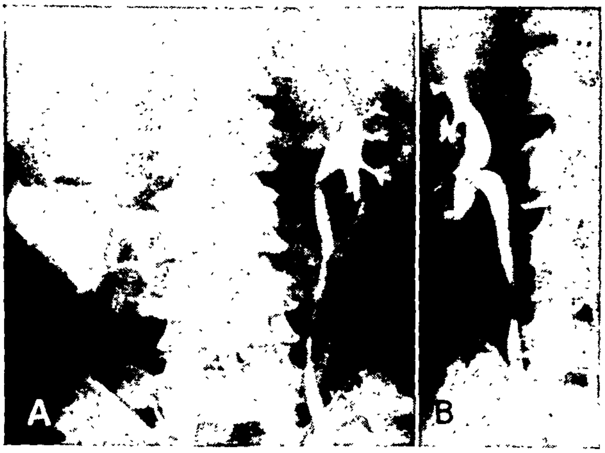

Fig. 3 (case 2).—*A*, massive extravasation on retrograde pyelogram made after railroad accident, and, *B*, remarkable recovery with nonoperative conservative measures only.

Case 3.—A 4-year-old girl fell while at play and struck the right loin on the arm of a chair. She experienced moderate pain and shortly thereafter passed gross blood in the urine. Excretory urogram made 24 hours later [illegible] interpreted as showing a ruptured kidney with a subcapsular accumulation of the dye (fig. 4*A*). The renal area was tender to palpation but no mass could be felt on admission, and the child was

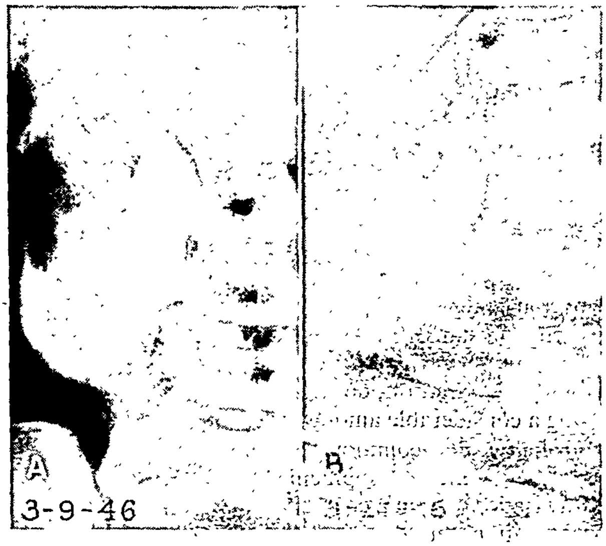

Fig. 4 (case 3).—*A*, intravenous pyelogram made 24 hours after [illegible] revealing subcapsular [illegible] four days later [illegible] *B*, result two weeks postoperatively considered satisfactory. Subsequent [illegible] tionable ureteropelvic [illegible] obstruction negligible.

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7. Turton, J. R. H., and Williamson, J. C. F. L.: Traumatic Rupture of Congenital Solitary Kidney, Brit. J. Surg. 23: 327-331 (Oct.) 1935.

treated expectantly. She did well for four days, but then began to run a spiking fever. A tender mass developed in the right loin. Accordingly operation was done on the sixth day after the accident. There was an accumulation of bloody fluid about the kidney, and a fragment of the lower pole was partially torn away and floating in this exudate. The necrotic fragment was cut away from the remainder of the kidney and Penrose drains placed in the depths of the wound. Recovery was prompt, and repeat excretory urograms made two weeks later indicated a satisfactory result (fig. 4*B*). There was concern about a possible ureteropelvic obstruction here, but films made elsewhere several months later were normal.

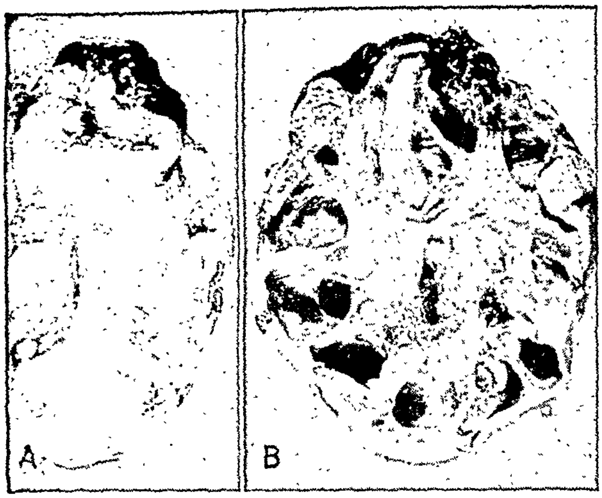

Fig. 5 (case 4).—Surgical specimen, *A*, exterior, and *B*, cross section, showing preexisting hydronephrosis with rupture at upper pole.

Case 4.—A 10-year-old boy was kicked in the right side by a playmate and complained immediately of severe pain. Five hours later, he passed grossly bloody urine containing clots. On admission shortly thereafter, he was in moderate shock with a large tender mass filling the right side of the abdomen and bulging in the flank. A kidney, ureter, and bladder film and excretory urogram showed a soft tissue mass on the right side. What were originally considered to be haustral bowel markings were subsequently proved to be tremendously dilated calices. Nephrectomy was carried out with the finding of a tremendous amount of clotted blood in the perirenal space originating from a tear in the upper pole of a preexisting unsuspected hydronephrosis due to ureteropelvic junction obstruction. The surgical specimen is shown in figure 5.

SUMMARY

The various causes and types of kidney injuries are discussed and classified. Damage to other organs frequently accompanies injury to the kidney and demands priority of treatment. The use of excretory urograms is valuable as an initial screening procedure to determine the status of both the injured and the uninjured kidney; when inconclusive, retrograde studies are indicated. In our hands, expectant conservative treatment has yielded satisfactory results in most cases. It is pointed out, however, that surgery should be performed if there is (*a*) persistent or recurrent massive hemorrhage, (*b*) failure of resorption of uninfected hematoma, (*c*) development of sepsis, or (*d*) preexisting disease of the kidney. The results of treatment in 66 cases are reported.

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MANAGEMENT OF URETERAL INJURIES

Hamilton W. McKay, M.D., H. Haynes Baird, M.D.
and
Homer R. Justis, M.D., Charlotte, N. C.

This paper is a plea for early recognition of ureteral injuries. Most injuries are relatively easily repaired if recognized early, and, since more extensive pelvic surgery is being done every day and the crushing type of body injury is sure to increase, more injuries will be seen. A clear understanding of the anatomy of the ureters in their various locations is necessary and essential to diagnosis and management. The ureters are well protected, small, and mobile and have elastic walls that resist ordinary injury. Injury to the ureters from external trauma is relatively rare, but a clear, simple classification of ureteral injuries based on the cause of injury should be kept before every surgeon and physician who is responsible for the management of ureteral injuries.

CAUSE OF INJURY

Ure[illegible] may result f[illegible]ma[1] such as a gunshot [illegible] wound [illegible]nds may cause puncture of the ureter by a spicula of bone or tearing associated with a pelvic fracture.[2] Ureteral injuries may also be a complication of surgery. These may be due to perforation or rupture caused by cystoscopy or perforation by a suture ligature; unilateral or bilateral ligation; clamping; kinking by a ligature; severing of the ureter; or laceration, contusion, or denuding.

Injuries may be either unilateral or bilateral; fortunately for most persons, bilateral injury from trauma is a surgical curiosity. As a surgical complication, both ureters may be ligated. On the other hand, one ureter may be severed or cut and the other ligated, or one ureter may be kinked by suture, while the opposite one is completely ligated. It is evident that there can be almost any combination of injuries of the ureter complicating extensive surgery on the pelvic organs in women. When extensive cauterization[1] of the cervix ureteri is performed, the luman of one of the ureters may be occluded by exudate or by extensive reaction in the tissues and may result in swelling of the mucosa and ureteritis.

A normal kidney on the opposite side from the ureteral injury should always be demonstrated. It is very easy to overlook a poorly functioning kidney or a kidney in

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[illegible] of Drs. McKay, McKay, B[illegible] Justis, [illegible] H[illegible].

[1] H[illegible], L.: [illegible] Practice [illegible] Philadelphia, W. B. Saunders Co., 1938, pp. [illegible].

[2] Bul[illegible], A. J., and Pe[illegible]: Ureter [illegible] Complicating Fracture of the Bony Pelvis, South. Surgeon [illegible]: 1139-1142 (Dec.) [illegible].

which there is arrested development. Injury to the ureter on one side with poor kidney function on the opposite side may completely change the surgeon's decision as to what operation is indicated as a lifesaving procedure.

Ureteral injuries from external trauma are rare, while injury to the ureters during extensive pelvic surgery is fairly common and will increase as a result of more frequent radical pelvic surgery. In 630 hysterectomies,[1] injury to the ureter occurred 19 times—10 times to one ureter, 3 times to a single ureter and the bladder, and once to both ureters. Wertheim [3] reported injury of the ureters in 10% of 500 radical uterine operations. At the present time, ligation, either unilateral or bilateral, is a more frequent injury, crushing by clamps is next, and cutting of the ureter or ureters is the least common of all injuries.

Injury to the ureter in kidney surgery is rare, but the ureters may be traumatized or torn during the operation for removal of stone. This accident has been reported at the ureteropelvic junction or in the lower third of the ureter, usually in obese persons with ulceration associated with a stone. The ureter is occasionally injured in operation for bladder diverticulas, or the ureters may be in a hernia sac and this injured.[1] Tuffier [4] in 1895 reported 40 cases of ureterovaginal fistula complicating vaginal hysterectomies.

In repair of the injured ureter, conservation of the kidney is as important as conservation in any type of kidney surgery. The same basic surgical principles and technical ingenuity must be applied to injuries of the ureter regardless of the cause.

TYPES OF INJURIES

Mild Injuries.—There are often slight or mild injuries of the ureters; for example, the puncture of the ureteral wall with a stiff catheter or stone extractor. Usually extravasation of urine does not take place if there is no obstruction below the puncture. In this type of injury, the circulation of the wall of the ureter is not interferred with and the treatment is bed rest, preferably in a hospital where careful observation is possible.

Severe Traumatic Injuries.—Severe injuries occur when the ureter is severely traumatized, denuded or torn during operative cystoscopy, or hooked or punctured by a needle during operation. In such instances, slight or extensive extravasation of urine may be expected depending on the extent of the injury. An indwelling catheter or intubation with free surgical drainage is the operation of choice in this type of injury. Ligation is the most frequent of all injuries in extensive pelvic surgery for removal of intraligamentous masses or in dissection for extensive cancer. Why gynecologists or surgeons who operate on the female pelvic organs do not use well-placed indwelling ureteral catheters is the riddle of this age of surgical progress and advancement. Pride in anatomic knowledge and surgical prowess is the only logical explanation for not using a simple surgical safeguard. If bleeding is troublesome and the operation extensive and technically difficult in pelvic surgery, injury or ligation of the ureter may, and often does, complicate the convalescence.

TYPES OF REPAIR

The following list of the various methods for repair of ureteral injuries is based on the paper by Prentiss and Mullenix.[5] The various methods include: (1) indwelling ureteral catheter with or without incision and drainage; (2) ureterostomy or pyelostomy; (3) ureterovesical reimplantation; (4) uretero-ureteral anastomoses; (5) ureterosigmoidostomy; (6) deligation; (7) reconstruction of a portion of the ureter using a vesical flap, and (8) nephrectomy. Rather than elaborate on the various methods, illustrative cases will be used.

REPORT OF CASES

CASE 1.—A 30-year-old white married man was in an automobile accident in March, 1952. He experienced mild low back pain after the accident, and a lumbar laminectomy was performed. Two weeks after this procedure, a mass developed in the left lower abdominal quadrant. An exploration was performed and revealed a large cystic cavity containing fluid resembling urine. An intravenous pyelogram showed a poorly functioning left kidney. After the exploratory operation, a sinus developed in the left lower abdominal quadrant from which urine drained for two weeks. Exploration of the left ureter was carried out one month after laminectomy, and the ureter was found to be severed just above the point where the ureter crossed the iliac vessels. There was a segment of the ureter about 2 cm. in length missing. The distal end of the ureter ended in a fibrotic mass in the vicinity of the iliac vessels, and clear urine was seen coming from the proximal end of the ureter. An end-to-end anastomosis was performed using the technique advocated by Davalos [illegible] 1947, [illegible] vertical mattress sutures were used. A ureteral catheter was left in place as [illegible] for about two weeks. Urine drained from the operative site for about one week after the catheter was removed. Cystoscopy and left ureteral catheterization eight months later showed no obstruction to the left ureter.

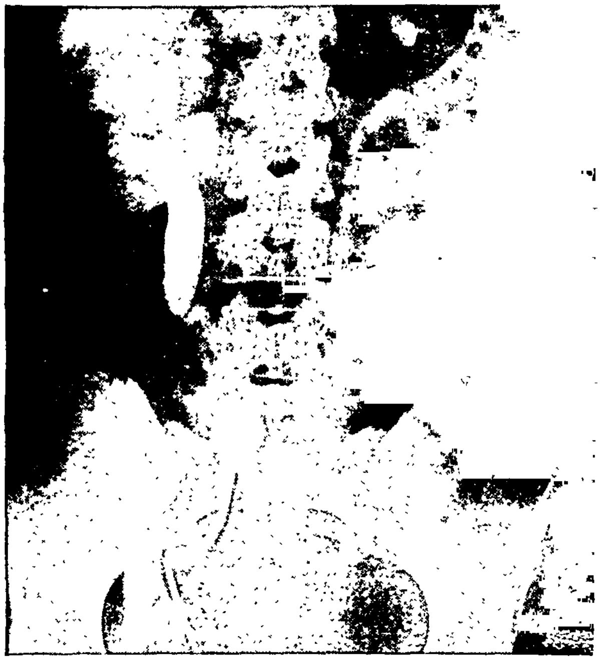

Fig. 1 (case 4).—Retrograde pyelogram showing a ureteral fistula, hydronephrosis, and an abscess cavity lateral to the right ureter.

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[3] Wertheim, H. H., quoted by [illegible] p. [illegible].

[4] Tuffier, quoted by [illegible] p. [illegible]

[5] Prentiss, R. J., and Mullenix, R. B.: Management of Ureteral Injuries in Pelvic Surgery, J. A. M. A. 145: 1244-1248 (April 21) 1951.

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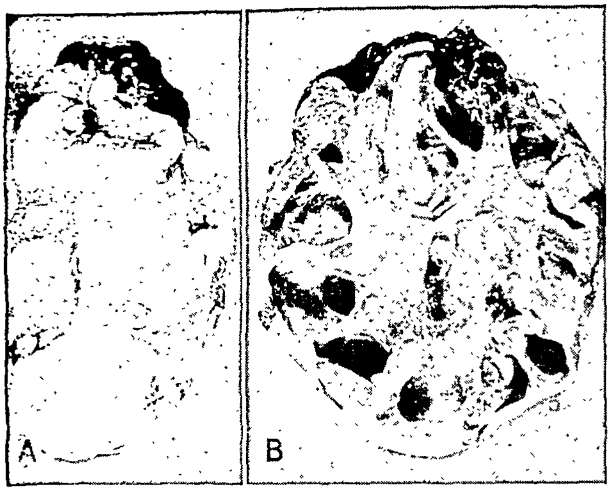

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From the urological services of Drs. McKay, McKay, Baird and Justis, Charlotte Memorial Hospital.

1. Freeman, L.: The Practice of [illegible], Philadelphia, W. B. Saunders Company, 1938, pp. [illegible].

2. Hull, A. J., and [illegible]: Ureteral [illegible] Complicating Fracture of the Bony Pelvis, South. Surgeon 16: 1139-1142 (Dec.) 1950.

which there is arrested development. Injury to the ureter on one side with poor kidney function on the opposite side may completely change the surgeon's decision as to what operation is indicated as a lifesaving procedure.

Ureteral injuries from external trauma are rare, while injury to the ureters during extensive pelvic surgery is fairly common and will increase as a result of more frequent radical pelvic surgery. In 630 hysterectomies,[1] injury to the ureter occurred 19 times—10 times to one ureter, 3 times to a single ureter and the bladder, and once to both ureters. Wertheim [3] reported injury of the ureters in 10% of 500 radical uterine operations. At the present time, ligation, either unilateral or bilateral, is a more frequent injury, crushing by clamps is next, and cutting of the ureter or ureters is the least common of all injuries.

Injury to the ureter in kidney surgery is rare, but the ureters may be traumatized or torn during the operation for removal of stone. This accident has been reported at the ureteropelvic junction or in the lower third of the ureter, usually in obese persons with ulceration associated with a stone. The ureter is occasionally injured in operation for bladder diverticulas, or the ureters may be in a hernia sac and this injured.[1] Tuffier [4] in 1895 reported 40 cases of ureterovaginal fistula complicating vaginal hysterectomies.

In repair of the injured ureter, conservation of the kidney is as important as conservation in any type of kidney surgery. The same basic surgical principles and technical ingenuity must be applied to injuries of the ureter regardless of the cause.

TYPES OF INJURIES

Mild Injuries.—There are often slight or mild injuries of the ureters; for example, the puncture of the ureteral wall with a stiff catheter or stone extractor. Usually extravasation of urine does not take place if there is no obstruction below the puncture. In this type of injury, the circulation of the wall of the ureter is not interferred with and the treatment is bed rest, preferably in a hospital where careful observation is possible.

Severe Traumatic Injuries.—Severe injuries occur when the ureter is severely traumatized, denuded or torn during operative cystoscopy, or hooked or punctured by a needle during operation. In such instances, slight or extensive extravasation of urine may be expected depending on the extent of the injury. An indwelling catheter or intubation with free surgical drainage is the operation of choice in this type of injury. Ligation is the most frequent of all injuries in extensive pelvic surgery for removal of intraligamentous masses or in dissection for extensive cancer. Why gynecologists or surgeons who operate on the female pelvic organs do not use well-placed indwelling ureteral catheters is the riddle of this age of surgical progress and advancement. Pride in anatomic knowledge and surgical prowess is the only logical explanation for not using a simple surgical safeguard. If bleeding is troublesome and the operation extensive and technically difficult in pelvic surgery, injury or ligation of the ureter may, and often does, complicate the convalescence.

TYPES OF REPAIR

The following list of the various methods for repair of ureteral injuries is based on the paper by Prentiss and Mullenix.[5] The various methods include: (1) indwelling ureteral catheter with or without incision and drainage; (2) ureterostomy or pyelostomy; (3) ureterovesical reimplantation; (4) uretero-ureteral anastomoses; (5) ureterosigmoidostomy; (6) deligation; (7) reconstruction of a portion of the ureter using a vesical flap, and (8) nephrectomy. Rather than elaborate on the various methods, illustrative cases will be used.

REPORT OF CASES

Case 1.—A 30-year-old white married man was in an automobile accident in March, 1952. He experienced mild low back pain after the accident, and a lumbar laminectomy was performed. Two weeks after this procedure, a mass developed in the left lower abdominal quadrant. An exploration was performed and revealed a large cystic cavity containing fluid resembling urine. An intravenous pyelogram showed a poorly functioning left kidney. After the exploratory operation, a sinus developed in the left lower abdominal quadrant from which urine drained for two weeks. Exploration of the left ureter was carried out one month after laminectomy, and the ureter was found to be severed just above the point where the ureter crossed the iliac vessels. There was a segment of the ureter about 2 cm. in length missing. The distal end of the ureter ended in a fibrotic mass in the vicinity of the iliac vessels, and clear urine was seen coming from the proximal end of the ureter. An end-to-end anastomosis was performed using the technique advocated by Davalos in 1947, except vertical mattress sutures were used. A ureteral catheter was left in place as drainage for about two weeks. Urine drained from the operative site for about one week after the catheter was removed. Cystoscopy and left ureteral catheterization eight months later showed no obstruction to the left ureter.

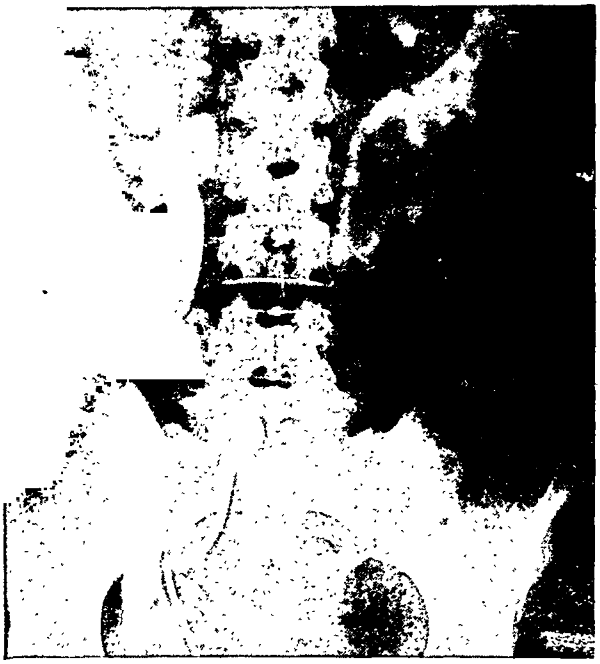

Fig. 1 (case 4).—Retrograde pyelogram showing a ureteral fistula, hydronephrosis, and an abscess cavity lateral to the right ureter.

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3. Wertheim, H. H., quoted by Hermann,[1] p. 254.

4. Tuffier, quoted by Hermann,[1] p. 255.

5. Prentiss, R. J., and Mullenix, R. B.: Management of Ureteral Injuries in Pelvic Surgery, J. A. M. A. 145: 1244-1248 (April 21) 1951.

A retrograde pyeloureterogram showed a normal upper left ureter and collecting system. Urinalysis was not remarkable at the time of cystoscopy.

The method of end-to-end repair of a ureter advocated by Davalos was used in this case with one *modification; namely,* vertical mattress sutures were used to evert the cut ends of the ureter. This case should be a very critical test for any procedure because of the time interval and the marked fibrosis that resulted from urine leaking into the tissues for such a long time. For these reasons it is thought that this method, when it can be utilized, is the best one to date.

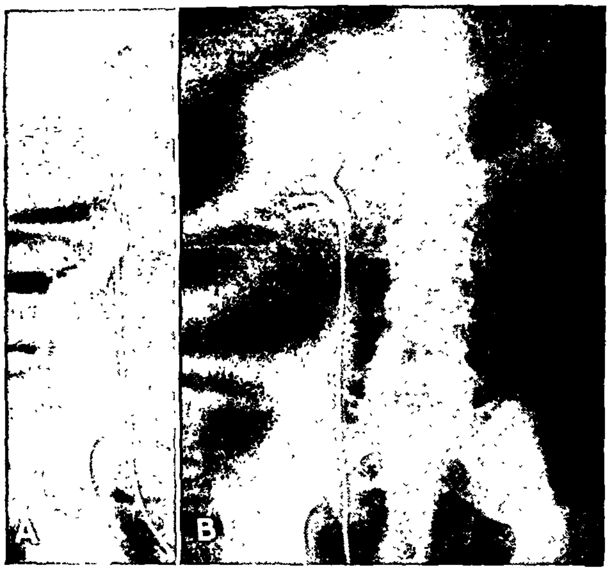

Fig. 2 (case 5).—*A*, preoperative retrograde pyelogram showing a ureterocutaneous fistula, and *B*, retrograde pyelogram, made six months after surgery, revealing a minimal hydronephrosis.

Case 2.—A 39-year-old white married woman had a total abdominal hyterectomy, bilateral oophorectomy, and right salpingectomy on Sept. 3, 1949. Right flank pain, abdominal distention, nausea, and vomiting developed on the fifth postoperative day. Cystoscopy on the sixth postoperative day revealed complete obstruction of the right ureter about 2.5 cm. from the right ureterovesical junction. An intravenous pyelogram showed a nonfuctioning right kidney. An abdominal laparotomy revealed that the right ureter was angulated from a suture. While an assistant passed a catheter up the right ureter to the point of obstruction, the operator was able to identify the ureter at the point of obstruction and to deligate it. *A catheter used as a splint remained in place for one week.* The convalescence was uneventful, and two years later an intravenous pyelogram showed a normal right upper urinary tract.

This case is included because it illustrates the correct method of caring for a patient who has had pelvic surgery. If all surgeons doing pelvic surgery followed their cases as closely and carefully as this gynecologist did, many kidneys would be saved. *Also, it illustrates how much more easily deligation* can be performed if the assistant passes a ureteral catheter up to the point of obstruction and gently probes while the operator deligates the ureter. A ureteral catheter with an electric bulb on the end can be used to advantage in deligation.

Case 3.—A 38-year-old white married woman was seen by Dr. Byerly, Jr. in Hartsville, S. C. Her chief complaint was of passage of watery discharge vaginally for two days. She had had a total abdominal hysterectomy 14 days prior to admission. At cystoscopy an obstruction was encountered in the right ureter about *2 cm. from the ureterovesical junction. Exploratory* operation performed by Dr. William Byerly revealed that the right ureter was incorporated in a suture and that there was a ureterovaginal fistula. The scar tissue plus the proximity of the fistula to the bladder made it impossible to perform a *primary ureteral anastomosis, so a reimplantation of the ureter* into the bladder was done using a site on the right anterior surface of the bladder wall for reimplantation. A urogram made five months after reimplantation of the ureter into the bladder showed a normal ureter and collecting system. In this case, *a good result was obtained by reimplantation* of the ureter in the bladder even though considerable time elapsed after the injury.

Case 4.—A 44-year-old white married woman was admitted because of the passage of a watery discharge vaginally for *about three days. Her history* revealed that she had had a Wertheim's operation for carcinoma of the cervix four weeks prior to admission. Cystoscopy revealed an obstruction in the right lower ureter about 9 cm. from the ureterovesical junction. A roentgenogram made while a catheter was inserted up to *the point of obstruction* revealed an abscess cavity and ureteral fistula (fig 1). An exploration of the right ureter revealed a periureteral abscess with a defect in the ureter. While an assistant passed a catheter up the right ureter, the operator was able to identify and to bypass the defect in the ureter with *the catheter. The ureteral catheter was left indwelling* for approximately two weeks.

It is often thought that the ureter must be surgically damaged for a fistula to follow. Here the ureterovaginal fistula must have been the result of a pelvic abscess following a radical *Wertheim operation because of the symptoms and signs present* and the time that elapsed after the surgery. It is our opinion that a fistula would have appeared much sooner had the ureter been injured by surgical trauma.

Case 5.—A 50-year-old white married man was admitted to *the hospital because of a draining sinus in the right lower* abdominal quadrant. His history revealed that he was treated elsewhere for "pus on the kidney." A cystoscopic examination was performed, and two days later signs and symptoms developed that his local physician thought were indicative of *appendicitis. An appendectomy was performed and a normal* appendix was found. Immediately after operation the man began to pass urine through the abdominal incision. Urine had been draining through a sinus in the right lower quadrant for one month at the time he was seen at the Memorial Hospital.

Fig. 3 (case 6).—*A*, retrograde pyelogram showing the ureteral catheter outside the ureter with extravasated dye and the bullet, and *B*, intravenous pyelogram two weeks after surgery showing a normal collecting system.

Physical examination revealed a 50-year-old white man *emaciated and chronically ill. There was a draining sinus* in the right lower quadrant from which a clear, yellowish fluid exuded. Cystoscopy and right retrograde studies demonstrated a right ureteral cutaneous fistula (fig. 2*A*). An exploration of the right kidney and ureter was carried out and a nephroureterorrhaphy *performed; a McIver tube was used to splint* the upper ureter for two weeks. A postoperative film at six months showed very slight hydronephrosis on the right side (fig. 2*B*). A retrograde pyelogram made two years later showed a normal upper urinary tract.

This case is the exception to the rule "perforation of a ureter with a catheter without obstruction below the perforation is usually of no serious consequence." It is possible, however, that this patient had a stone below the perforation and that the stone was passed after a sinus was well established. The simple principle of intubated ureterotomy, namely, repair with nephrostomy drainage through a McIver nephrostomy tube, was utilized. As shown in figure 2*B* the results were good.

Case 6.—A 26-year-old white married man was admitted through the emergency room after a gunshot wound of the abdomen. Shortly after admission, an abdominal laparotomy was performed with closure of the perforation of the gallbladder and transverse colon. A flat plate of the abdomen made prior to surgery showed a metallic foreign body (bullet) in the right lower quadrant, but no attempt was made to remove this object at the time of operation.

On the fourth postoperative day, the patient began to pass grossly bloody urine. An intravenous pyelogram showed moderate dilatation of the right calyceal system and the right ureter down to the vicinity of the metallic foreign body seen on the flat plate at the time of admission. Cystoscopic examination and right ureteral catheterization and oblique roentgenograms on the 10th hospital day showed that the metallic body in the right lower quadrant lay outside of the course of the right ureter. There was also seen an extravasation of the dye in the right midureter on attempted retrograde pyelography (fig. 3*A*). On the 16th hospital day, exploration of the right ureter revealed a periureteral abscess with a defect in the wall of the ureter. While an assistant cystoscoped the patient and passed a catheter up the right ureter to the region of the abscess, the catheter bypassed the defect in the ureter and passed to the renal pelvis. Postoperatively the ureteral catheter was left in the right ureter for 10 days. An intravenous pyelogram made two weeks after the catheter was removed showed a normal collecting system and ureter on the right side (fig. 3*B*). This case illustrates repair by the simple method of intubated ureterotomy.

SUMMARY

The causes for ureteral injury are given with six illustrative cases. Each case represents a basic principle utilized in repair with resultant conservation of renal tissue. Follow-up films are shown in three of the six cases. Prevention of ureteral injury during pelvic surgery is greatly facilitated by indwelling ureteral catheters.

1012 Kings Dr. (Dr. McKay).

INJURIES OF THE BLADDER

George C. Prather, M.D., Brookline, Mass.

Recovery from major injury of the bladder is directly dependent upon the promptness of the diagnosis and the promptness as well of the type of surgical treatment. In few urologic conditions is immediate action more mandatory. This paper proposes to discuss briefly present day procedures relative to the diagnosis and the acknowledged principles of treatment.

AGENTS CAUSING BLADDER INJURY

Penetrating objects, external in source, such as bullets, shell fragments, large splinters, and the surgical scalpel, have caused perforation of the bladder. Likewise, penetrating objects, internal in source, such as urologic instruments, can and have perforated the bladder with equally serious results. Nonpenetrating agents such as a blow to the lower abdomen can cause a bursting of the full bladder. Fracture of the bony pelvis often causes a rupture by tearing the moorings of the bladder. Spontaneous rupture of the bladder is usually associated with gross disease of the bladder wall.

CLASSIFICATION

A simple classification can be made for bladder injuries. The term "contusion" describes the submucosal hemorrhage or mucosal edema that follows pelvic operation or delivery or minor trauma from urologic instruments. There is no perforation of the wall, and no treatment is needed. Rupture or perforation of the bladder wall is traditionally divided into the extraperitoneal or intraperitoneal types. The term intraperitoneal rupture indicates that there is a hole through the wall of the bladder that leads into the peritoneal cavity, whereas with extraperitoneal rupture, the perforation leads into perivesical tissue but not into the peritoneal cavity. The former type is commonly seen in patients as a result of blows to the lower abdominal wall, in accidents associated with the energized loop of the resectoscope, and in about 18% of bladder injuries caused by fracture of the bony pelvis. The latter type (extraperitoneal rupture) is commonly seen in fractures of the bony pelvis and in accidents from difficult urethral instrumentation, as well as from perforations during transurethral operations.

One of the serious aspects of bladder rupture is the hemorrhage and shock that commonly follow. Another serious aspect is the well-known toxic effect of urine in the peritoneal cavity or in undrained soft tissue. Sterile urine can be introduced periodically into the peritoneal cavity in small quantities at widely spaced intervals without causing peritonitis. However, the continuous seepage of sterile urine into the peritoneal cavity or the presence of any quantity of infected urine in the peritoneal cavity causes peritonitis. When sterile urine permeates undrained soft tissue, it causes necrosis, sloughing, and suppuration, which can prove fatal. Infected urine in undrained tissue accelerates this vicious reaction. The third serious feature associated with rupture of the bladder can be hemorrhage from pelvic vessels adjacent to the bladder in sufficient quantities at times to distort the contour of the bladder into a pear-shaped organ, dubbed "tear drop bladder" by Prather and Kaiser.[1]

SYMPTOMS AND DIAGNOSIS

The classical symptoms of rupture of the bladder that have become well recognized are shock and clinical evidence of hemorrhage, low abdominal pain rather con-

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Read in the Symposium on Injuries to the Urinary System before the Section on Urology at the 102nd Annual Meeting of the American Medical Association, New York, June 2, 1953.

[1] Prather, G. C., and Kaiser, T. F.: Bladder in Fracture of Bony Pelvis: Significance of "Tear Drop Bladder" as Shown by Cystogram, J. Urol. 63: 1019, 1950.

stant in type, a desire to void but inability to do so, and hematuria, gross in type. Gilbert and Dodson [2] recently reported that 13% of patients with ruptured bladder and 40% of those with ruptured urethra were able to void. All had hematuria. When rupture of the membranous or prostatic urethra is present, bleeding from the external urethral meatus is common. If the physician is alert to the possibility of bladder injury, the diagnosis can often be surmised from the symptoms and clinical findings mentioned above. Because recovery is so dependent on prompt recognition and prompt treatment and because surgical treatment must often be undertaken in a patient who is in a very critical condition, I believe a positive diagnosis should be established as quickly as possible, if the procedure for the diagnosis is reliable and incurs no risk. The indecision and possible error involved in catheter and irrigation tests makes them unsatisfactory for a final opinion. Likewise, cystoscopy is likely to prove futile if not harmful. Cystography is believed to be the most reliable diagnostic procedure, as indicated by Bacon,[3] Crane and Schenck,[4] and by my personal experience.[5]

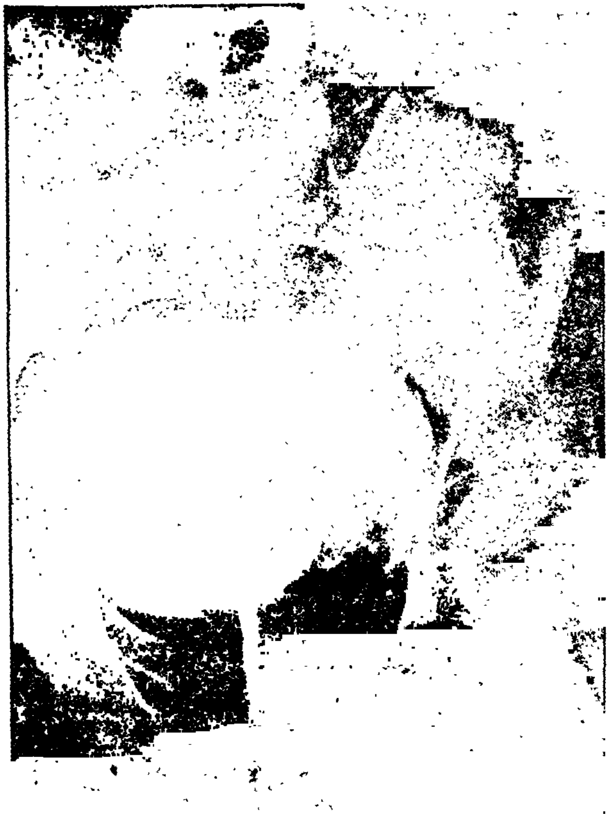

Fig. 1.—Retrograde cystogram showing extensive intraperitoneal extravasation of the injected opaque medium.

The following program has proved satisfactory. After improvement in the state of shock (if it exists), the patient is moved on a Bradford frame to an x-ray table where a scout film of the abdomen and bony pelvis is taken. With a blood pressure of at least 90 mm. Hg systolic, an intravenous urogram can then be started in the routine manner. This should give information regarding the presence of the kidneys and some information as to their condition. After the 30 minute film, even though the bladder shadow shows no evidence of extravasation, the patient should be catheterized under sterile precautions and a retrograde cystogram done with 150 cc. of 10% methiodal (Skiodan) sodium; these films should be taken with the patient in the oblique and anteroposterior position. We have seen instances in which the intravenous cystogram appeared normal but in which rupture was easily demonstrated by the retrograde cystogram. Gilbert and Dodson [2] have also stressed the importance of taking a roentgenogram of the bladder region after the retrograde cystogram has been taken and after the opaque dye has been emptied from the bladder. They found that in a few instances the distended bladder in the cystogram obscured a small extravasation of the opaque dye.

If the sterile catheter cannot be passed to the bladder and there is bleeding from the external urethral meatus, one must presume a rupture of the membranous or prostatic urethra. To demonstrate this lesion, we suggest an urethrogram with a sterile, water-soluble, opaque medium such as Rayopake (viscous aqueous solution containing 50% diethanolamine salt of 2,4-dioxo-3-iodo-6 methyl-tetrahydropyridine-N-acetic acid) or 20% methiodal sodium. Taking films with the patient in the oblique and anteroposterior positions during an injection of 20 to 30 cc. of this material by syringe from the external meatus should reveal the location and the extent of the rupture in the urethra. The purpose of

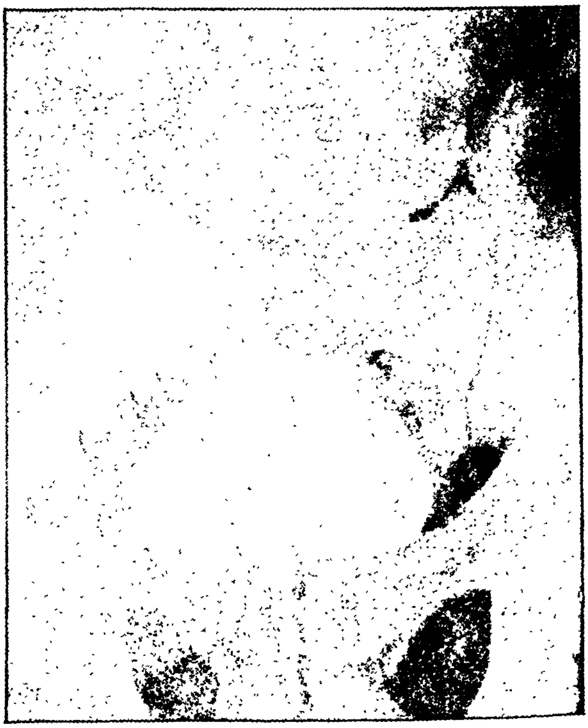

Fig. 2.—Retrograde cystogram showing small perforation of the bladder.

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2. Gilbert, D. R., and Dodson, A. I.: Traumatic Lesions of Urinary Bladder and Urethra (Study of 50 Cases), West Virginia M. J. 47: 359, 1951.

3. Bacon, S. K.: Rupture of Urinary Bladder: Clinical Analysis of 147 Cases in Past 10 Years, J. Urol. 49: 432, 1943.

4. Crane, J. J., and Schenck, G. F.: Rupture of Urinary Bladder: Clinical Study of 26 Cases Taken from Los Angeles County General Hospital, Urol. & Cutan. Rev. 36: 614, 1932.

5. Prather, G. C.: Bladder Injuries: Treatment Past and Present, New York J. Med. 53: 318, 1953.

these roentgenologic studies is to obtain as precise information as possible regarding injury of the bladder or urethra. The characteristic picture is that of extravasation of the opaque medium beyond the normal outline of the lower urinary tract, as illustrated in figures 1 and 2.

TREATMENT

If rupture of the bladder is demonstrated, immediate surgery is mandatory to prevent further extravasation of urine and to drain perivesical tissue already permeated by urine. This is best accomplished by suprapubic cystotomy, drainage of the bladder by a suprapubic tube, and drainage of perivesical tissue by Penrose drains in cases of extraperitoneal rupture. The treatment for intraperitoneal rupture should be suprapubic cystotomy, drainage of the bladder by suprapubic tube, suction removal of urine from the peritoneal cavity, and closure of the peritoneum without drainage. If the ruptured area of bladder wall can be closed easily, it should be done, although this step is less important than those just mentioned. Usually a period of 7 to 10 days of drainage after cystotomy will suffice. At that time the suprapubic tube can be removed, and an urethral catheter can be placed to facilitate closure of the surgical incision. If there has been interruption in the continuity of the prostatic or membranous urethra, every effort must be made at the time of surgery to splint this segment with a urethral catheter, in addition to draining the bladder by suprapubic tube. Suprapubic drainage should be maintained for at least 10 days. The urethral catheter used to splint the ruptured urethral segment should remain for three weeks or longer.

There may be two exceptions to the principles and procedures just described. The first is the instance in which, during an abdominal surgical operation, a small opening is accidentally made in the bladder and is recognized immediately. In such a problem, closure of the bladder wall in two layers and drainage of the bladder by a large urethral catheter for a period of seven days should permit a normal convalescence. The second is the accidental perforation of the prostatic cavity or bladder neck during transurethral surgery leading to an extraperitoneal type of injury. If this complication is recognized immediately, drainage of the bladder by urethral catheter and the use of antibiotics may permit a normal convalescence. Kenyon[6] has advocated such a program. Should an interval of hours or longer lapse before this complication is recognized, suprapubic surgery will offer the best chance of recovery.

PROGNOSIS

Rupture of the bladder is a serious condition and always justifies a guarded prognosis. Immediate diagnosis and surgical treatment, however, will permit a hopeful outlook if other bodily injuries do not impede progress.

SUMMARY

Traumatic injury of the bladder creates a urologic emergency. The most reliable diagnostic measure is a retrograde cystogram made with 150 cc. of a sterile opaque medium like 10% methiodal (Skiodan) sodium. Prompt surgical treatment including suprapubic cystotomy, drainage of the bladder with a suprapubic tube, and drainage of perivesical tissue offers the best chance of recovery.

1180 Beacon St. (46).

[6] Kenyon, H. R.: Perforation in Transurethral Operations: Technic for Immediate Diagnosis and Management of Extravasations, J. A. M. A. **142**: 798 (March 18) 1950.

OTITIS EXTERNA: THE FACTS OF THE MATTER

J. W. McLaurin, M.D., Baton Rouge, La.

Otitis externa is a disease about which, for a number of years, there has been nothing particularly new to say. Its fundamental facts, however, continue to be so misunderstood that no apology is necessary for stating them over again. Similarly, fundamental principles of treatment must be restated because many of the therapeutic methods now in use are based on a complete misunderstanding of both the clinical course and the pathological process. Otitis externa is not a lethal disease. Under ordinary circumstances it is not even incapacitating, at least not in the strict sense of the term. On the other hand, it is responsible for an incalculable amount of discomfort, a great deal of lost time, and a considerable expense to the patient. As for the otologist who treats it, he usually disregards the niceties of English diction and describes it, simply and correctly, as "aggravating." How the otologist views otitis externa, it must be admitted, depends largely on his geographical location. If he practices in the North or East or anywhere else where the climate is usually dry and cool, he is not likely to regard it as of much importance, because he does not see much of it. If he practices in the South or Southwest, he is likely to regard it as of major importance. Some otolaryngologists in these parts of the country say that it constitutes as much as 40% of their office practice. Medical officers in the Pacific Ocean areas and other tropical theaters in World War II, depending on where they had practiced in civilian life, either learned, often with a great deal of surprise, of its frequency and importance or had their opinion of its importance as well as of its nuisance value confirmed.

Otitis externa caused the withdrawal of major numbers of fighting men from active duty in World War II. Military authorities eventually hesitated about permitting personnel with a history of the disease to proceed overseas because often, in spite of the most intensive and time consuming treatment, the men eventually became invalided and had to be sent home. The seriousness of

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this disease can be inferred from the fact that an experimental study was conducted on it after the war by the National Research Council in Great Britain, and a similar project is now being conducted by the U. S. Navy in Jacksonville, Fla. Experimental studies, unfortunately, have not been highly productive. The British investigation,[1] which was devoted chiefly to the effects of moisture in the meatus, showed little more than that an accumulation of sweat in this area is unlikely to be an important factor in the production of the disease in hot climates, a point of view that I also hold. Haley's[2] studies on allergic otitis externa showed little more. Unless the rabbits were already sensitized and trauma was also a factor, an allergic reaction did not occur when spores of fungi were introduced into the ears.

GENERAL CONSIDERATIONS

Age and Race.—One of the curious facts about otitis externa is that it is a disease of all ages and that its manifestations are essentially the same at every period of life. The age range of the 157 patients who form the background of this paper was from 1 to 75 years, and, of these, 43, or well over one-fourth, were children under 5 years of age. Knight,[3] in a recent analysis of 308 cases from Knoxville, Tenn., reported an age range in his patients of 1 month to 87 years. The incidence under five years of age was considerably less than in my own series, which is probably somewhat weighted by the number of persons in whom the infection of the external ear followed otitis media. The cases reported in this communication were all chosen from my private practice, and all patients were members of the white race. In the Tulane University School of Medicine clinics at Charity Hospital of Louisiana at New Orleans we see only occasional cases in Negroes. Less than 1% of the cases Knight reported occurred in Negroes, though 4% of his office practice is of that race. As he says, the most reasonable explanation of the low incidence among Negroes is that the circumstances are less favorable for the development of the disease because the external auditory canal is shorter, straighter, and wider in these persons.

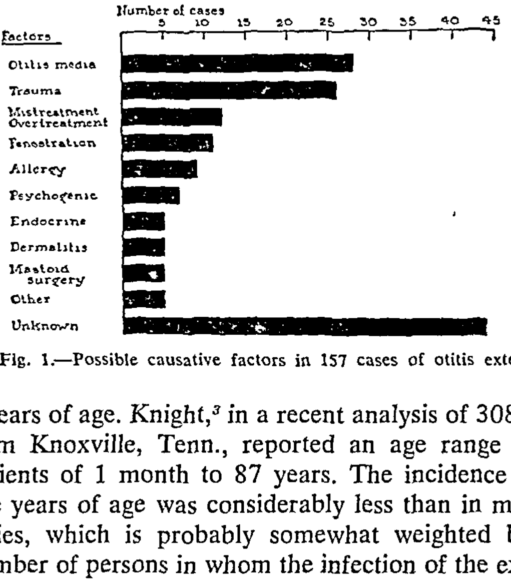

Fig. 1.—Possible causative factors in 157 cases of otitis externa.

Causes.—The actual causes of otitis externa are frequently obscure. The anatomic structure of the external ear, as just implied, favors its development. The canal, which is wedge-shaped, ends, for all practical purposes, in a blind recess. It is the only epithelium-lined cul-de-sac in the body. It is widely exposed to external infection. It is always moist. The lining skin is constantly macerated, and debris consisting of dead, horny tissue is therefore always present. The regional glands secrete cerumen upon which, even under sterile conditions, it is possible to grow certain micro-organisms. These are all highly favorable circumstances for the development of infection, particularly when two other factors enter the picture, namely, trauma and an alteration in the normal pH. Many times the actual traumatic act cannot be identified, though paper clips, hairpins, and similar objects are often deliberately introduced into the ear. On the other hand, the most casual inspection of any group of persons will show how often the ears are fingered and the external canal is scratched as an entirely unconscious act. The objects thus introduced are not sterile nor are the fingers. They are usually contaminated, and they may be infected. I would not go so far as to say, with Stewart,[4] that patients with Bacillus coli infection of the ear "look a scruffy and unwashed lot," but he has a point; there is often a lack of cleanliness even on the most unexpected social levels. Once, therefore, the protective layer of skin is broken, the way is paved for the introduction of infection. Then, once infection is introduced, scratching becomes a conscious act, and a vicious circle is set up.

The importance of the pH values of the skin of the external auditory canal in the causation of otitis externa is generally overlooked, though this consideration often explains both the development of infection and the success or failure of many therapeutic regimens. In the adult, values are chiefly within the acid range, and infection is discouraged. When, for any reason, the values rise to the alkaline level, the environment ceases to be bactericidal and there is a predisposition to the development of infection or to its enhancement if it already exists. My own feeling is that the background of every case of otitis externa is twofold: (1) interruption of the continuity of the epithelial lining of the external auditory canal and (2) a change of the pH from the acid to the alkaline side. Once these conditions are established, bacteria and fungi have full opportunities for growth, and their potentialities for harm are often unintentionally activated and increased by the therapeutic use of agents whose pH is on the alkaline side.

There are no other universally applicable causes of otitis externa, though there are a number of other predisposing causes (fig. 1). Among them are nasal, oral, and dental sepsis; anemia; avitaminosis; endocrine imbalance; psychogenic disturbances; and allergic reactions to such things as nail polish, wave set lotions, nickel and plastic spectacle frames, and feather pillows. The skin on the auricle is thin and vascular and, therefore, more reactive than anywhere else on the body.[5] When once an allergic reaction is set up, it may be complicated by secondary infection with bacteria or fungi. Overtreatment has been recognized for years as a cause of persistent otitis externa. All of us can duplicate Branca's[6] experience; one of his patients, with a 10 year history of infection, brought with her on her first visit more than 20 ointments and solutions with which she had been treated. Mastoid surgery is also a long-recognized precursor of otitis externa. So is otitis media, which is becoming more frequent as an antecedent because it is so universally mistreated with antibiotics. When I reviewed several hundred records of otitis externa in 1949, I was not particularly impressed by the importance of preceding otitis media. When I reviewed these 157 cases, I was surprised to find it as an apparent cause in 28, in 6 of which it was associated with persistent perforation. The chronic otorrhea that is one of the possible sequels of the fenestration operation is a cause that was unknown 15 years ago.

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[1] Collins, E. G.: Certain Observations on the Anatomy, Histo-Pathology, and Physiology of the External Auditory Meatus, J. Laryng. & Otol. 65: 14-23 (Jan.) 1951.

[2] Haley, L. D.: Etiology of Otomycosis: III. Observations on Attempts to Induce Otomycosis in Rabbits, Arch. Otolaryng. 52: 214-219 (Aug.) 1950.

[3] Knight, L. L.: Otitis Externa: An Analysis and Discussion of 308 Cases, Eye, Ear, Nose & Throat Month. 29: 200-203 (April) 1950.

[4] Stewart, J. P.: Chronic Exudative Otitis Externa, J. Laryng. & Otol. 65: 24-32 (Jan.) 1951.

[5] Hansel, F. K.: Allergy of the External Ear, Tr. Am. Acad. Ophth. 56: 197-200 (March-April) 1952.

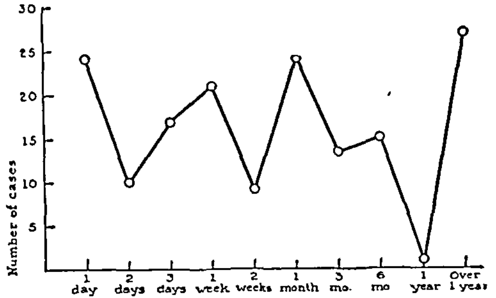

Fig. 2.—Duration in 141 stated cases of otitis externa.

These are all possible causes, but none of them explain all cases, and in many instances there is no evident cause. In this series of 157 cases, even when all reasonable causes and predisposing conditions had been invoked, almost a third of the cases were left with no explanation at all, and it must be granted that not every cause listed is entirely convincing.

CLASSIFICATION

How confusing the classification of external otitis really is can be gathered from Cornbleet and Schorr's[7] remarks on nomenclature. There is objection to the term eczema, they say, on the ground that it connotes some special type of dermatitis not reflected in the histological findings. They themselves prefer the term for the opposite reason; it provides a reasonable enough definition of the entity and confesses ignorance as to the cause. As a matter of fact, one reason for the confusion in classification of otitis externa is that the term has been used loosely and carelessly for a number of different diseases that have almost nothing in common except their location in the external ear. Senturia and Marcus[8] have done much to clarify this phase of the disease.

Otitis externa can be classified on the arbitrary basis of duration as acute, subacute, chronic, and recurrent. In the 157 cases analyzed for this series the duration ranged from one day in 24 cases to over a year in 27 cases (fig. 2). Two patients in the latter group stated that they had had the disease all their lives. More credence can usually be given to statements of short than of long duration, though the tendency to overstate this detail is an indication of the annoyance caused by the disease. As a matter of fact, the most important consideration in the classification of otitis externa is its division into bacterial and fungous types. This disease is a good example of the dictum that it takes as long to get an error of fact out of a textbook as to get a new fact into it. Textbook descriptions are still surprisingly inaccurate. The disease is still described as otomycosis. In 1844 Mayer,[9] who is credited with the first mention of it, stated that it was of little if any importance, an error of opinion that has already been disposed of earlier in this paper. He also stated that it was always of fungous origin, an opinion that was almost universally accepted as fact until World War II. Then the disease was observed in mass numbers, as already noted, and even the most elementary investigations possible under combat conditions made it clear that it is a bacterial disease, and that fungi are responsible for it or are present in association with bacteria in only a small number of cases.

My chief reason for using these 157 cases of otitis externa as the background of this paper is that all of them were investigated in the laboratory, the organism or organisms present were identified (fig. 3), and the therapeutic agents to which they were sensitive were determined. In one sense, this series is not representative. In many instances the bacteriology was altered by the fact that a large number of the patients had treated themselves or been treated elsewhere before I saw them. Micrococci (staphylococci) were present in 67 of the 157 cases. If the patients had been seen earlier, Pseudomonas would probably have proved to be most frequent, just as it is likely to prove most troublesome, with Paracolobactrum next in the order of frequency. In the whole group there was only one fungous infection, by Candida.

PRACTICAL CONSIDERATIONS OF TREATMENT

The chief reason for most of the difficulties in the management of otitis externa, as well as the explanation of most of the poor results, is failure to observe certain principles that are applicable no matter what agent or regimen is used. On the other hand, the realities must be faced, and it is entirely possible to do this without any compromise with principles. I am therefore discussing these practical considerations before passing on to principles and specific therapy. It is important that treatment

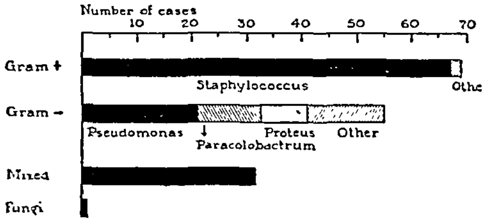

Fig. 3.—Causative agents in 157 cases of otitis externa.

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[6] Branca, H. E.: External Otitis, A. M. A. Arch. Otolaryng. **57**: 310-327 (March) 1953.

[7] Cornbleet, T., and Schorr, H. C.: Chloromycetin for Eczema and Pruritus of the Ear Canal, Arch. Dermat. & Syph. **62**: 907-908 (Dec.) 1950.

[8] Senturia, B. H., and Marcus, M. D.: Etiologic Classification of Diseases Involving the External Ear, Ann. Otol. Rhin. & Laryng. **61**: 18-32 (March) 1952.

[9] Mayer, cited by Wolf, F. T.: Relation of Various Fungi to Otomycosis, Arch. Otolaryng. **46**: 361-374 (Sept.) 1947.

cover as brief a time as possible, partly because there is the risk of sensitization and partly because patients will not tolerate unduly prolonged treatment. From every standpoint it is a bad plan to treat a child any oftener than is absolutely necessary. A business man, a housewife, or anybody else who has regular employment and duties will find it difficult to make repeated office visits and may solve the problem by ceasing to make them as soon as some degree of improvement is obtained. At the first visit, therefore, the patient should be told that this is an obstinate disease and that the course of treatment is sometimes prolonged, but that he may be assured that it will be concluded as promptly as possible.

Theoretically, Fowler and Feind[10] are entirely correct in their statement that an analysis of cases in which the otologist has not himself been responsible for all the therapy may contain many errors. That is why, as they point out, it is difficult to evaluate series of cases reported by different physicians who have obtained widely different results with the same agents. On the other hand, it is simply not possible to see all patients daily, let alone several times daily, and they must be left to carry out their own treatment. Treatments should therefore be as simple and uncomplicated as possible, so that the patient will carry them out as directed and will not be tempted to omit them or discontinue them altogether. To insure that treatment will be carried out correctly, the technique should be demonstrated to the patient in the office, and in addition he should be given written instructions so simply worded that misunderstanding is impossible. They can be written on the prescription blank along with the prescription. Precautions must be taken against self-medication when the desired results have been obtained. The physician is usually to blame for this error, but frequently, for reasons of economy or otherwise, patients either use a prescription until it is exhausted or use what is left over from previous treatment if they think they are again suffering from the same disease. This is particularly unwise in otitis externa, in which recurrence may be on an entirely different bacteriological basis. Proprietary medications, fortunately, are usually put up in small amounts, and it is best to prescribe not more than half an ounce or, at the most, an ounce of any solution. The prescription blank should also bear the notation that the prescription is not to be refilled.

A frequent and serious error in the management of otitis externa is concentration on the local condition to the exclusion of the predisposing cause. Nothing can be done about climate and humidity, of course, but bad hygienic habits, lack of cleanliness, and failure to keep the ears dry can readily be corrected and will go far toward overcoming conditions that cannot be changed. The patient must be warned to prevent trauma to the ears by keeping his fingers and other objects out of them. Anemia, vitamin and endocrine deficiencies, and allergic states must be corrected. Finally, while a resort to a psychogenic explanation should be the last step of management, not the first, as it is all too likely to be today, there is no doubt that even when the disease is clearly bacterial in cause, emotional and other psychogenic factors may explain recurrent flare-ups. I have in mind one of my own patients who failed to respond permanently to any measure until I recognized the cause-and-effect relationship between her recurrent attacks of otitis externa and her serious marital difficulties. When she finally secured a divorce, her ears healed permanently. The case is a perfect illustration of Waltner and White's[11] observation that an analysis of individual factors of failure in otitis externa is often more rewarding than statistical studies.

GENERAL PRINCIPLES OF THERAPY

Cleansing of the Ear.—Fabricant,[12] discussing the principles of therapy of otitis externa, said that the guiding plan should be a maximum of inspection and a minimum of therapy. If he had added to his principles the most scrupulous care in cleansing the ear and keeping it clean and dry, he would find most otologists in full agreement with him. I am among those who believe that if patients could be seen daily, which is obviously impossible, most of these infections could be cleared up merely by repeated daily cleansing. Series of cases treated in this manner do not seem to have been reported, but this practice may explain the good results obtained with some agents credited with cures beyond the bounds of reason.

Cleansing the ear before any treatment is instituted is important for a number of reasons. Moisture, maceration, and epithelial debris and dead tissue accumulated in the dead-end canal provide excellent conditions for the growth of organisms and for the production of the alkaline environment favorable to their growth. Cleansing of the canal overcomes, as far as possible, the regional anatomic peculiarities that favor the development of infection. Finally, removal of the obstructing debris permits whatever agent is used to be brought into direct contact with the tissues; this is an essential of successful therapy. Different observers prefer different methods of cleansing. Some in particular prefer suction alone because they fear the introduction of fluids. The fear is unfounded if the ear is left thoroughly dry. This is another one of the steps of management in which, if principles are observed, details will take care of themselves. My own plan is to use the suction tip if that is possible; to begin with irrigations of tap water or alcohol, with drying by compressed air if tenderness and edema prevent manual cleansing; or to begin with wicks of Burow's solution if even irrigations cannot be tolerated. The cleansing must be carried out under adequate illumination and must not be hurried. It must be done deliberately and gently because, at the best, it is not free from pain. All wax must be removed along with other debris. Too much evidence that both bacteria and fungi can grow on wax exists to make it safe to leave wax in an infected ear.

Relief of Pain.—The relief of pain or discomfort is an important consideration of treatment, if only because that is why most patients seek medical advice. Often the pain is so severe that it is difficult or impossible to do anything else until it is relieved. Small applications of roentgen rays are valuable for this purpose. The ear is capable of tolerating up to 600 r without damage, but the wisest plan is to limit the treatment to 100 r, applied through a cone no larger than 2.5 cm. in diameter, and not to repeat the application if it is not successful. Though the exact mechanism of relief remains to be elucidated, there is no doubt that this is an effective method. It has succeeded in literally dozens of selected cases treated over the past 12 years, sometimes within three or four hours. Aspirin, codeine, or stronger drugs may be used as necessary until radiation therapy has had time to act.

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[10] Fowler, E. P., and Feind, C. R.: Topical Applications to the Skin of the Ear Canal, Tr. Am. Acad. Ophth. 53: 637-643 (July-Aug.) 1949.

[11] Waltner, J. G., and White, W. R.: Topical Medication in Otology, New York J. Med. 50: 2421-2426 (Oct.) 1950.

[12] Fabricant, N. D.: The Acute Ear, Eye, Ear, Nose & Throat Month. 30: 430-431 (Aug.) 1951.

Cultural Studies.—The fact that cultural studies were made in all 157 cases in this series should not be taken to indicate that they are necessary in all cases of otitis externa. They are not. There were special reasons for them in many of these cases. They are made routinely in infections following the fenestration operation, which must be cleared up quickly if the restored hearing is not to be affected adversely. For the same reason they are also made without delay in all cases preceded by otitis media. They are usually made on patients from out of town, who naturally wish treatment to be concluded as quickly as possible. Finally, they are necessary in all patients who have had previous treatment, especially young children, because the original infection has been obscured, so to speak, by the results of therapy.

Cultural studies are imperative in any case if the otologist treating the patient has had only a limited experience with otitis externa or none at all. Unlike the experienced otologist, he cannot tell positively from the clinical examination whether the infection is caused by bacteria or fungi. If the infection is bacterial, it is even more unlikely that he can determine by gross inspection whether the causative organism is gram-negative or gram-positive. These are essential data, and, if the otologist is sufficiently experienced to make these decisions, he is entirely justified in instituting treatment on the basis of his clinical observations. Otherwise, treatment must be delayed until laboratory aid is secured.

A culture should always be made if clear-cut improvement is not evident within 48 to 72 hours after treatment has been begun. If a culture has already been made, it should be reexamined and another prepared. It is becoming more and more frequent, as the indiscriminate use of specific agents increases, to find that the micro-organism or micro-organisms present in a particular case do not respond to drugs to which they formerly responded, and that some new agent must be employed. A number of details in the making of cultures are extremely important. The otologist must obtain the exudate and streak the mediums himself. These tasks must not be left to technicians or others not thoroughly familiar with the ear. The exudate must be secured under direct vision, with sterile precautions, by a technique that insures absence of contamination. It must be streaked on the slant as soon as it is secured.

Cultures can be reported within 24 hours, but the laboratory should be requested to hold them for at least 21 days, partly for future reference and partly because some fungi and molds do not become manifest until this length of time has elapsed. The usual report is that the flora is mixed, with a particular type predominating. If Micrococcus is the predominant organism, a coagulase test is run. If this test is positive, the organism is considered pathogenic and a therapeutic agent is selected to which gram-positive organisms are susceptible. If it is negative, the organism is regarded as a saprophyte and treatment is directed toward the mixed gram-negative organisms present. At present, sensitivity tests are conducted in respect to penicillin, streptomycin, dihydrostreptomycin, chlortetracycline (Aureomycin), oxytetracycline (Terramycin), chloramphenicol (Chloromycetin), neomycin, erythromycin, sulfisoxazole (Gantrisin), sulfanilamide, sulfadiazine, 4-amino-2-methyl benzene sulfonamide hydrochloride (Sulfamylon), polymyxin B (Aerosporin) sulfate, metacresylacetate (Cresatin), and Otosmosan (20.5% sulfathiazole carbamide in dehydrated glycerol). This may seem to be an ambitious program, but, with the filter paper methods now available, the tests are easily performed at a cost that is not excessive.

PRINCIPLES OF SPECIFIC THERAPY

In a sense it is almost unfortunate that the new etiological concept of otitis externa as a bacterial rather than a fungous disease came into being at about the time that antibiotics came into use. The cardinal principle of specific therapy is that it be used specifically. That principle has been violated in every conceivable variety of disease, but probably in none has it been violated so frequently and so consistently as in otitis externa. Pharmaceutical houses have been liberal in their production of antibiotic (and other) preparations for topical application and in some instances have done themselves a disservice by making extravagant claims of universal usefulness. Physicians regrettably have often been equally liberal in their use of these preparations without regard to their essential properties or to their applicability to the cases under treatment. It is time that we returned to the first principles of specific therapy and used the new drugs only on the basis of species-sensitivity to them.

There are a number of other principles to be observed in specific therapy. Whatever agent is selected should have an acid pH for the reasons mentioned earlier. If an agent with a high pH value is selected, the infection will in all probability be enhanced, and the external ear will actually be prevented from returning to its normal physiological state. Consideration must be given to the vehicle in which the therapeutic agent is applied. My own preference is for aqueous solutions, partly because they are effective and partly because their use simplifies the interpretation of poor results. Many patients with otitis externa are highly sensitive, and, if a reaction occurs when an ointment, for instance, is being used, treatment must be suspended while it is determined which component of the base is responsible for the difficulty. When an aqueous solution is used, any reaction that occurs can be attributed forthwith to the drug it contains. Another reason for care in the selection of the base, if one prefers salves and ointments to aqueous solutions, is that some vehicles slow up or completely inhibit the liberation of the specific agents used. Sulfonamides, for instance, are released only slowly or in minute quantities if they are incorporated in petrolatum and lanolin bases, and their efficiency is correspondingly decreased.

A therapeutic agent, however effective it may be, cannot destroy an organism until it comes into contact with it. It is surprising how often this obvious fact is ignored. The patient should be specifically instructed to fill the whole aural canal with the medicament prescribed. Unless this point is emphasized, he is likely to use only a few drops, and the results of treatment are almost certain to be unsatisfactory. The therapeutic agent must be employed in sufficiently high concentration to be promptly effective. Otherwise, the problem of drug resistance will be added to other difficulties of management. This is not merely a theoretical consideration. The new agents have, unfortunately, been used so promiscuously and so indiscriminately that the organisms present in any given infection are more and more likely to be resistant to therapy and to require high concentrations to destroy them. A number of the micro-organisms responsible for otitis externa now respond to only one or two agents. If they become resistant to them, the otologist will find himself with no means of combating the disease other than mechanical cleansing and general therapeutic measures. A considerable number of the patients in this series had infections resistant to or only slightly sensitive to as many as eight of the drugs tested, and three had infections that were resistant to every agent tested.

When the infection is controlled, treatment should be discontinued. I cannot agree with Waltner and White [11] that prolonged local medication is important to forestall recurrence, particularly the frequent appearance of Pseudomonas aeruginosa. The continued application of antibiotic or other solutions or ointments, though the original selection may have been made on the basis of sensitivity-testing, is often responsible for dermatitis medicamentosa. Almost as soon as penicillin became available, dermatologists warned that, if it were used for more than five days, sensitivity reactions might occur. Their warnings were correct, but they were not always heeded. What is true of penicillin is also true of most other agents used topically. It is a serious error to use them indefinitely. If they are properly selected and if they are applied in what is, after all, a very small area according to the principles just laid down, the predominant organism can usually be brought under control within the specified five days or less. Once this has been accomplished, the problem is to restore the external auditory canal to its normal physiological state. This is best achieved by the prompt withdrawal of active therapy and the institution of general hygienic measures. If, as sometimes happens, the disease began as a dermatitis or an allergic reaction, the original condition may persist after the infection is controlled, but it will not be aided by continuation of therapy designed for another purpose.

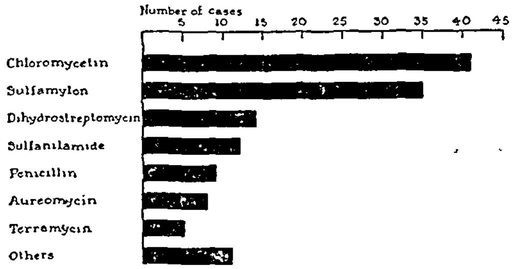

Fig. 4.—Specific therapy (alone or combined) in 124 cases of otitis externa.

DETAILS OF SPECIFIC THERAPY

I have left only a brief time for the discussion of special agents in the treatment of otitis externa, which is probably as it should be. If the principles outlined have been strictly observed, the agent will have been properly selected, and the results of treatment are likely to be good. I say this with some hesitancy because, as more than one observer has pointed out, relief of symptoms is not synonymous with cure, and a complete follow-up of all cases would probably furnish all of us with some unpleasant surprises.

Sulfamylon, which was used in 25 of the 157 cases in this series (fig. 4), is the drug of choice when a sensitivity test has not been run as well as the best agent when there is no indication for other therapy. It has a number of advantages. Its bactericidal range is so wide that it covers practically the whole bacterial spectrum. It does not harm epithelium or other body tissues. It is active in the presence of pus and blood. It is not affected by changes in the acidity of the environment. It is relatively nontoxic. It has good solubility, and only the soluble portion of any antibacterial substance is active. It has an acid pH, and increased acidity is usually present after the acute infection has subsided. Sulfisoxazole was used in only two cases in this particular series, but I have recently used it in a number of other patients and have found that it possesses many of the advantages of Sulfamylon. Penicillin is useful when furunculosis is a feature of the infection, but it must always be used intramuscularly, never topically. Patients are quickly sensitized to it, and it is ineffective in obstinate chronic infections, which many cases of otitis externa become. When it is used systemically, some other agent, such as chlortetracycline or chloramphenicol, may be used topically, usually as a dusting powder. Streptomycin should not be used unless the sensitivity test clearly indicates its value. A reaction would be unlikely to occur with it, however, unless the patient was primarily allergic to it.

Neomycin, chlortetracycline, and sulfanilamide are all useful topically when they are indicated. Neomycin is particularly effective in Pseudomonas infections, which, as already noted, tend to be extremely obstinate. Oxytetracycline and chloramphenicol are frequently used as dusting powders in the office while the patient merely uses dry wicks at home. I have ceased to use chloramphenicol systemically since its hemolytic properties have become evident. Polymyxin B sulfate is usually used as an ointment, and bacitracin must always be used in this form because it is unstable in solution. Otosmosan was used in only one case in this series, a fungous infection not responsive to any other agent. It is effective but should be used with caution, since many patients are sensitive to it. Antibiotic or other drug therapy is not always required. In 6 of these 157 cases only dry wicks were used. Most of these infections followed the fenestration operation, and they cleared up promptly with minimal local treatment. Adjunct therapy, which was used in 27 cases, included antihistaminic drugs, micrococcic (staphylococcic) toxoid, thyroid extract, and calcium.

In 1936 McBurney and Searcy [13] tested 69 drugs and combinations of drugs that had been recommended for use up to that time in what was then called otomycosis.

I have evaluated the 205 agents and combinations of agents recommended since that date, though I have tested only some of them. I formerly used 26 of the recommended drugs with more or less satisfaction, but I have replaced them by newer and more effective agents and methods. I am using 24, on various indications, at present, and, when they are properly applied, they are all satisfactory. I formerly used 41, with poor results or complete failure. Seven are unknown to me under the names used for them in the reports, which are chiefly from the British literature. I have never used 19, but they seem reasonable, and I imagine that they would be useful. I have never used 88 of the recommended drugs, nor do I intend to try them, because they seem impractical, illogical, or actually dangerous. If any commentary were needed on the therapeutic confusion in otitis externa and on its difficulties of management, it would be hard to imagine a better one than the number and variety of agents and regimens that I have just evaluated.

SUMMARY AND CONCLUSIONS

The basic facts of otitis externa continue to be misunderstood, and therapy, as a result, continues to be misapplied. In a large proportion of cases there is no clear causative factor. The most important consideration of classification is the distinction between bacterial otitis externa, which comprises the great majority of cases, and disease of fungous origin. Treatment is a matter of principles that must be strictly observed, but, at the same time, therapy must be conducted on a realistic basis. It is particularly important that specific treatment be applied according to precise principles. If these are observed, specific agents and other drugs will be correctly selected and properly applied.

2340 Tulip St. (11).

13. McBurney, R., and Searcy, H. B.: Otomycosis: An Investigation of Effective Fungicidal Agents in Treatment, Ann. Otol. Rhin. & Laryng. 45: 988-1008 (Dec.) 1936.

METABOLISM OF URIC ACID AND ITS RELATION TO GOUT

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Gout is a disease characterized in its early stages by recurrent acute attacks of arthritis that respond specifically to treatment with colchicine and in its later stages by progressive deposition of sodium urate in cartilage and around joints in association with chronic arthritic changes. The salient feature of the disease is hyperuricemia, a condition shared by siblings and close relatives of the patient. Though hyperuricemia is not alone responsible for gout, no explanation for the cause of the disease is acceptable unless it can satisfactorily account for this familial tendency.

It is said that gout is due to an inborn error of metabolism of uric acid. Such a statement is probably inaccurate. It is more likely that the so-called error of metabolism, if it does exist, is shared by all mankind. It is a defect inherited by primates in the evolutionary struggle, a fault that induces even in normal man a uselessly high concentration of uric acid in the body fluids. In the person with familial hyperuricemia, this fault is apparently merely exaggerated.

Uric acid has been the *enfant terrible* of metabolic products of the animal kingdom ever since the evolution of higher forms. The property that always makes it something to be reckoned with is its insolubility, both as the free acid and as the sodium salt. The stable solubility of urate in serum is of the order of 6.5 mg. per 100 cc. Above that concentration it may still remain dissolved, but as an unstable supersaturated solution subject to sudden precipitation. The factors that influence this precipitation are for the most part unknown. In the internal body fluids, the precipitate formed is sodium urate; in acid urine, it is uric acid.

The low solubility of urate was not always a handicap. In the birds and reptiles, the first of the important terrestial vertebrates, the insolubility of uric acid was a boon that permitted the successful development of the embryo in the hard-shell or cleidoic egg. The egg contained only a limited quantity of water, which the embryo could ill afford to expend in the formation of urine. By learning to convert to uric acid not only the purines from nucleic acid but also the ammonia from amino acids, the embryo could excrete through the kidneys a dilute solution of uric acid, the water of which could be almost completely absorbed in the cloaca, leaving the uric acid as a solid mass to be retained in the allantois. If urea, which is highly soluble, had been the end product, the bulk of the water could not have been absorbed against the gradient of the increasingly concentrated urea solution. The embryo would then have died from desiccation or from uremia. The adult bird or reptile preserved this so-called uricotelic mechanism.

With the development of the viviparous mammal, with its different type of kidney and genitourinary system, the uricotelic mechanism not only served no useful purpose but also became a potential handicap. The insolubility of urate produced the danger of precipitation in the kidneys and body tissues. In these animals, as in the amphibians, an arginase system of enzymes that effectively converted ammonia to urea developed in the liver. The loss of water in the excretion of urea was no detriment to either the embryo or the adult animal. But even the small quantity of uric acid formed from purines was an encumbrance, and in these animals the enzyme uricase was elaborated, which catalyzed the oxidation of uric acid to the soluble and innocuous allantoin.

Two imperfections in uric acid metabolism remained present in the mammals. While they were of no consequence to the allantoin-producing animals, they placed

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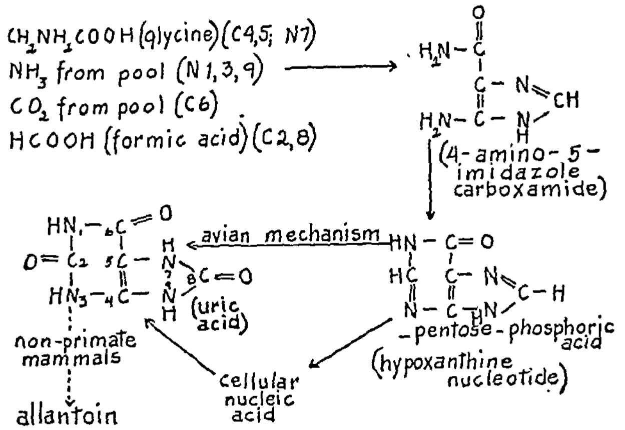
Read before the Section on Pathology and Physiology at the 102nd Annual Meeting of the American Medical Association, New York, June 2, 1953.

man and the ape, two species in which the enzyme uricase has failed to appear, in jeopardy from precipitation of urates. The first imperfection is that the mechanism in birds by which uric acid is made from ammonia is still present in the mammals, even though it is used chiefly for the synthesis of purines of cellular nucleoproteins. The second is that excretion of urate by the mammalian kidney is inefficient, most of the glomerularly filtered urate being reabsorbed by the tubules. Let us examine these two factors more closely, for in one or both of them appears to lie the cause of hyperuricemia.

OVERPRODUCTION OF URIC ACID

Purines are not essential items in the diet. The two purines, adenine and guanine, that are utilized in cellular nucleoproteins and certain coenzymes can be synthesized by all higher forms of animals. This fact was first demonstrated 80 years ago by Miescher on the Rhine salmon, and it has been confirmed on many other animals, including man, by many investigators. The nature of the precursors of the purines has only recently been established by a brilliant series of isotopic experiments from several laboratories.[1] The ingredients used to make the purine ring are the following: glycine, which furnishes carbon 4 and 5 and nitrogen 7; carbon dioxide for carbon 6; ammonia from amino acids for nitrogens 1, 3, and 9; and formic acid from several amino acids for carbons 2 and 8. The compound first formed from these ingredients has been identified as 4-amino-5-imidozole-carboxamide, which is converted to the purine hypoxanthine. It is interesting that the synthesis does not produce free hypoxanthine but instead hypoxanthine nucleotide, which is the well-known compound inosinic acid, discovered by Liebig more than a century ago (see figure).



Pathways of purine metabolism, including avian mechanism for production of uric acid without previous formation of nucleic acids.

Hypoxanthine is apparently the initial purine synthesized. From it, by amination processes, are formed adenine and guanine. At least the latter must be in combination with ribosephosphoric acid or desoxyribosephosphoric acid when synthesized; for it has been shown from isotopic experiments that administered guanine is not incorporated into body nucleic acid. Ingested isotopic adenine was found both as adenine and as guanine in body nucleic acid. In birds and reptiles, the synthesis of hypoxanthine as outlined above is used not only for the formation of nucleic acid but also for the conversion of waste ammonia to uric acid. Recent experiments indicate that even in mammals, though the bulk of ammonia is converted to urea, some ammonia is rapidly converted into uric acid, apparently through the hypoxanthine mechanism, hypoxanthine being oxidized by xanthine-oxidase to xanthine and then to uric acid. Stetten and his colleagues [2] have demonstrated the same mechanism in man, by feeding radioactive nitrogen (N^{15})-labeled glycine and finding small quantities of the N^{15} as uric acid. The excretion was too rapid to be accounted for by the synthesis of nucleoprotein from the glycine and the subsequent breakdown and oxidation to uric acid.

In experiments on two persons with gout, Stetten found a similar but exaggerated formation of N^{15}-containing uric acid in the urine after administration of N^{15}-containing glycine. He therefore believes, as does Gutman,[3] that familial hyperuricemia as found in persons with gout is caused by overproduction of uric acid because of an exaggerated uricotelic vestige.

UNDEREXCRETION OF URIC ACID

The excretion of uric acid by the mammalian kidney is not very efficient. A large portion of the urate filtered by the glomeruli is reabsorbed by the proximal convoluted tubules by active enzymatic processes. In the dog, about 75% of the filtered water is reabsorbed.[4] This inadequacy is of no consequence in such animals, for the uric acid is so quickly oxidized to allantoin in the liver that the plasma level of urate is kept below 1.0 mg. per 100 cc. The Dalmatian coach hound, as everyone knows, has the peculiarity of excreting large quantities of uric acid, more per kilogram of body weight than man. This high excretion, however, is not due to absence of uricase (the quantities found in the liver are the same as in other dogs) but to the virtually complete failure of the renal tubules to reabsorb urate.

Man's efficiency in excreting urate is even lower than that of the dog and other common mammals, for the tubular reabsorption is greater than 90%. With a urate clearance of 10 cc. per minute (the range given by Talbott [5] being 6 to 12 cc.), the normal man has to maintain a plasma level of 4.0 mg. per 100 cc. to excrete 576 mg. per day, which is about the amount excreted with an average diet. If the urate excretion were ideal in man, that is, glomerular filtration without tubular reabsorption, the same amount of urate could be excreted with a plasma level of 0.32 mg. per 100 cc. Because of the futile tubular reabsorption, all human beings must carry uric acid in the body fluids at a concentration not far below the saturation point.

The question of whether the renal excretion of urate in persons with gout is even more impaired than in normal persons has not yet been satisfactorily answered. If it were determined, there would be no argument about the cause of hyperuricemia. The difficulty lies in the fact that the clearance of urate must be determined in the person with gout at an abnormally high level of plasma urate. Berliner [6] has demonstrated that in normal persons, into whom urate has been injected intravenously, the clearance rises with increasing plasma levels, even though a greater percentage of the glomerular filtrate is reabsorbed. Most studies show the daily excretion of urate in persons with gout to be within normal limits. Talbott [5] found the range of clearance to be 4 to 11 cc. per minute, or slightly lower than normal. It appears reasonable to believe that if normal excretion in the person with gout is accomplished only in the presence of hyperuricemia, then the clearances would have been less than normal, if the plasma levels had been lower. If this is true, it means that, while all humans labor under the difficulty of an inefficient renal excretion of urate because of the purposeless tubular reabsorption, the patient with familial hyperuricemia has an exaggeration of this defect (see table).

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[1] Christman, A. A.: Purine and Pyrimidine Metabolism, Physiol. Rev. **32**: 303 (July) 1952.

[2] Benedict, J. D., and others: Incorporation of Glycine Nitrogen Into Uric Acid in Normal and Gouty Man, Metabolism **1**: 3 (Jan.) 1952.

[3] Gutman, A. B., and Yü, T. F.: Gout, a Derangement of Purine Metabolism, in Advances in Internal Medicine, Dock, W., and Snapper, I., editors, Chicago, Year Book Publishers, Inc., 1952.

[4] Smith, H. W.: The Kidney: Structure and Function in Health and Disease, New York, Oxford University Press, 1951.

[5] Talbott, J. H., and Coombs, F. S.: Metabolic Studies on Patients with Gout, J. A. M. A. **110**: 1977 (June 11) 1938.

Thus hyperuricemia may be due to either overproduction of urate or to underexcretion of urate, both being defects common to all men, but one or both being more pronounced in the person with gout. Whatever is the real cause of the hyperuricemia, it is obvious that it is the inability of the kidney to adjust its tubular reabsorption to the requirements of urate excretion that is the real fault. As a consequence, the required excretion is accomplished by an increased plasma concentration of urate. If the level were not above the saturation point and if the person with gout did not have some factor that caused sudden precipitation in and around joints and bursae, hyperuricemia would pose no problem. But hyperuricemia ultimately defeats its own purpose. With precipitation of urates in the tissues, the serum level should fall; however, a renewed high level is soon established to maintain excretion, and the stage is set for further precipitation. Repeated waves of positive balance of uric acid are thereby produced by the very hyperuricemia designed to avoid this eventuality.

THE MISCIBLE POOL OF URIC ACID

From the laboratories of Brown,[7] Stetten,[7] and Talbott,[7] respectively, have come interesting isotopic experiments designed to measure the easily miscible uric acid content of the body. By injecting N^{15}-containing uric acid into normal patients and into those with gout and measuring the percentage of the isotopic uric acid in the total urate in the successive urine samples, these investigators have been able to calculate the amount of body uric acid that originally was mixed with the injected isotope compound. In normal man the quantity was of the order of 1,200 mg. and probably represented all the uric acid present in the body. The turnover rate was found to be about 600 mg. per day, or somewhat more than is usually found in the urine per day. If these indirect methods of calculation are accurate, the results indicate that 100 or more milligrams of urate are actually destroyed daily in the human body, even though no uricase is present. Most of this amount can be accounted for by bacterial decomposition of urate in the gastrointestinal secretion. Whether any considerable portion is destroyed by other means is still controversial, though new evidence from Stetten's laboratory [8] points to such a conclusion.

In the person with gout the miscible pool of uric acid ranged from 3 to 30 gm., the latter quantities being found in patients with chronic tophaceous gout. Since 30 gm. evenly dissolved in 42 liters of body fluid would give the impossibly high concentration of 73 mg. per 100 cc., the bulk of this miscible pool must be in the form of easily dissolvable crystals that go in and out of solution and that can therefore become homogeneously mixed with injected isotopic uric acid. However, this quantity does not include the large deposits of chalky urate in tophi, for only the outer molecular layer of these deposits has been found to contain isotopic urate. Thus a patient with many tophi may have several hundred grams of urate in deposits difficult of access, 25 to 30 gm. in the form of easily miscible crystals, and 2 to 3 gm. in solution. When such a patient is treated with a good uricosuric agent the urate in solution and in the form of fine crystals is first removed, and the material from the tophi is carried away very slowly. Eventually, even the tophi may gradually shrink during a protracted course of treatment with a uricosuric agent. Gutman [9] could account for 75 gm. of extra uric acid excreted in five months. I have seen similar cases.

Relation of Plasma Urate Concentration to Urate Clearance in Man as Modified by Changes in Tubular Reabsorption of Urate

Type of Man	Urate Clearance, Cc./Min.	Plasma Urate, Mg./100 Cc.	Tubular Reabsorption, %
Normal	10	4.0	92
Ideal *	125	0.32	0
Normal, with probenecid medication *	20	2.0	84
Person with gout *	5	8.0	96
Person with gout, with probenecid medication *	10	4.0	92

* In each case, 576 mg. of urate is excreted each day. The ideal condition for urate excretion would be one in which there was no tubular reabsorption. Then man could excrete 576 mg. per day at a plasma level of 0.32 mg. per 100 cc., instead of at 4 mg. per 100 cc. when 92% of the filtered urate is reabsorbed. The presumption is made here that gouty hyperuricemia is due entirely to increased tubular reabsorption. Thus probenecid sends the normal kidney toward the ideal state for urate excretion and converts the kidney of the person with gout to a normal one.

THE ACUTE ATTACK IN GOUT

Hyperuricemia is essential to gout, but additional factors are responsible for the acute attack. The suddenness of onset, the predilection for the metatarsophalangeal joint of the great toe, the exquisite tenderness and pain, the specific rapid response to colchicine, and the slower spontaneous complete remission without medication are all characteristics of gout, known for many centuries but inadequately explained to this day. It is probable that the attack is induced by the sudden precipitation of sodium urate in and around joints and by an exaggerated inflammatory response to this precipitation. But even this conclusion has been denied, especially by Hench [10] and by Gutman.[8] The latter would like to implicate some unknown precursor or derivative of uric acid. But even if the attack is caused by sudden deposition of urate, the causes of the attack and reasons for such an intense inflammatory response—which cannot be reproduced experimentally—are not clear.

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[6] Berliner, R. W.; Hilton, J. G.; Yü, T. F., and Kennedy, T. J., Jr.: The Renal Mechanism for Urate Excretion in Man, J. Clin. Invest. **29**: 396 (April) 1950.

[7] (*a*) Geren, W.; Bendich, A.; Bodansky, O., and Brown, G. B.: The Fate of Uric Acid in Man, J. Biol. Chem. **183**: 21 (March) 1950. (*b*) Benedict, J. D., and others: The Effect of Salicylates and Adrenocorticotropic Hormone upon Miscible Pool of Uric Acid in Gout, J. Clin. Invest. **29**: 1104 (Aug.) 1950. (*c*) Bishop, C.; Garner, W., and Talbott, J. H.: Pool Size, Turnover Rate and Rapidity of Equilibrium of Injected Isotopic Uric Acid in Normal and Pathological Subjects, ibid. **30**: 879 (Aug.) 1951.

[8] Wyngaarden, J. B.; Benedict, J. D., and Stetten, de W., Jr.: Uricolysis in Man, Following Intravenous Administration of Uric Acid-1, 3-N^{15}, Fed. Proceedings **12**: 294 (March, pt. 1) 1953.

[9] Gutman, A. B.: Some Recent Advances in Study of Uric Acid Metabolism and Gout, Bull. New York Acad. Med. **27**: 144 (March) 1951.

Yet there are some clues. There is evidence that a temporary adrenocortical deficiency has something to do with the acute gouty episode. The commonest precipitating factors of an acute attack are trauma, surgical operation, infection, allergic reaction, exposure to cold or heat, psychic stress, and foreign protein therapy. These are all factors producing stress that are associated with a sudden increase in secretion of adrenocortical hormone, followed by a decrease to a subnormal level. Excessive excretion of sodium has frequently been seen at the time of the attack. Furthermore, remissions of acute attacks can be produced by administration of corticotropin in doses too small for the nonspecific effect seen in acute rheumatoid arthritis and comparable diseases. Also, the daily excretion of 17-ketosteroids has been found subnormal in patients with gout.[11] These circumstances, in addition to the recent demonstration by Benedict and associates [7b] that corticotropin decreases tubular reabsorption of urate, offer substantial argument that the patient with gout has an absolute or relative deficiency of adrenocortical secretion or a diminished target responsiveness to the hormone at the time of the attack.

TREATMENT OF GOUT WITH PROBENECID (BENEMID)

Management of gout to be successful must provide not only alleviation of the acute attack but also a mechanism for a continuous negative balance of uric acid until the miscible pool has been restored to normal size. Treatment of the acute attack is no great problem today. Colchicine in doses of 0.5 or 0.6 mg. (1/120 or 1/100 grain) every 2 to 4 hours usually produces a remission in 48 hours. In severer cases, or when diarrhea has set in, corticotropin gel in doses of 20 U. S. P. units every 12 to 24 hours for three or four doses, followed by colchicine three or four times a day, will usually bring a quick subsidence of pain, swelling, and tenderness. However, colchicine has no effect on urate metabolism or excretion. Therefore, it offers no benefit in long-term management. Indeed, the very effectiveness of colchicine in the acute attack may be a snare that deludes the patient and physician into believing something is being done to eliminate the disease. Only by preventing the accumulation of urate and by ridding the body of the stored urate can true improvement be accomplished. Such measures involve the use of an effective but innocuous uricosuric agent, a substance that increases the excretion of uric acid by diminishing its tubular reabsorption. The best of such compounds at the present time is probenecid.

Probenecid, or *p*-(dipropylsulfamyl) benzoic acid, has been found to be a powerful agent that reversibly inhibits renal tubular transfer, suppressing tubular excretion of penicillin, [illegible] p-aminohippuric acid, and phenolsulfonphthalein. In this respect it is similar to its predecessor carinamide, but, while the latter is required in doses of 16 to 24 gm. per day, probenecid accomplishes the same effect in doses of 1 to 2 gm. daily. Probenecid, like carinamide, has been found to inhibit tubular transfer of urate in the opposite direction, apparently by inhibition of an enzyme action common to both types of transfer. Single doses of 2 gm. of probenecid have been shown by Sirota and others [12] to increase the clearance of urate by several hundred per cent. The effect is maximal in 2 to 4 hours but is still present after 24 hours. A dose of 2 gm. of probenecid daily more than doubles the excretion of urate in patients with gout during the first few days of treatment and reduces the plasma level of urate by 30 to 60% within 48 hours.[13] With the lowering of the plasma urate concentration, the total daily excretion falls, but it is great enough to maintain a persistent negative balance of 0.2 to 0.4 gm. uric acid daily. Though maximal excretions are obtained with 2 gm. doses daily, it is found advisable to use only 0.5 to 1.0 gm. daily in most cases in order to avoid urinary concretions. At the beginning of treatment, probenecid may actually induce acute attacks by mechanisms that are not understood. However, if the initial dose is kept at 0.5 gm. per day for several weeks, and if colchicine is given three or four times a day during this early period, such attacks can usually be prevented. The dosage is then increased to 0.75 or 1.0 gm. daily and kept at that level indefinitely. Except for isolated instances of sensitivity to the drug, probenecid has proved to be remarkably free of toxic effect.

The clinical results of probenecid medication in chronic tophaceous gout have been unequivocally gratifying. Within six months immobilized painful joints have regained a good portion of their mobility, allowing bedridden or crippled patients to return to work. Such relief is undoubtedly due to the removal of crystals of urate from the joint regions and to the subsequent diminution in inflammation and muscular spasm. In addition, there has been an unmeasurable improvement in the patients' well-being and psychological outlook. Treatment has now been carried out long enough to demonstrate that the number and severity of acute attacks are eventually diminished. Since probenecid has no other direct pharmacodynamic effect than to increase excretion of urate, the diminution in the number of attacks must be related to removal of the crystalline deposits. It appears as if these crystals act as seedings for further acute depositions. Though comparable beneficial results in nontophaceous gout are difficult to demonstrate, the protracted administration of small doses of probenecid is justifiable even in these cases.

It is worthy of note that, though salicylates are also good uricosuric agents, they completely annul the uricosuric effect of probenecid.[13] Why these two drugs, instead of acting synergistically, are mutally anatagonistic is, at present, not clear. Patients being given probenecid medication must not be given aspirin or other salicylates.

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[10] Hench, P. S.: Gout and Gouty Arthritis, in Modern Medical Therapy in General Practice, Barr, D. P., editor, Baltimore, Williams & Wilkins Company, 1940, vol. 3, p. 3359.

[11] Wolfson, W. Q., and others: Endocrine Finding Apparently Characteristic of Gout: Very Low Urinary 17-Ketosteroid Excretion with Clinically Normal Androgenic Function, J. Clin. Endocrinol. 9: 497 (June) 1949.

[12] Sirota, J. H.; Yü, T. F., and Gutman, A. B.: Effect of Benemid (p-[di-n-Propylsulfamyl]-Benzoic Acid) on Urate Clearance and Other Discrete Renal Functions in Gouty Subjects, J. Clin. Invest. 31: 692 (July) 1952.

[13] Pascale, L. R.; Dubin, A., and Hoffman, W. S.: Therapeutic Value of Probenecid (Benemid®) in Gout, J. A. M. A. 149: 1188 (July 26) 1952.

It is ironical that, although enormous strides have recently been made in the elucidation of the metabolism of uric acid and other purines, the greatest contributions to the treatment of gout have been made, on the one hand, by the discovery of the value of colchicum by unscientific ancient herbgatherers, and, on the other hand, by the synthesis of probenecid, designed by clever chemists and pharmacologists for purposes far removed from the problems of gout.

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RELATIONSHIP OF ENDOMETRIAL HYPERPLASIA AND ADENOCARCINOMA OF THE UTERINE FUNDUS

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For many years there has been conjecture as to the possible sequential relationship of endometrial hyperplasia and adenocarcinoma, and recent research in this field has been intensified. This paper presents a short discussion of the question with full appreciation of the fact that on many points our knowledge is too incomplete to justify arbitrary expressions of viewpoints. Since there are still many uncertainties as to a definite relation between hyperplasia and adenocarcinoma in human beings, it seems justifiable to evaluate it on the abundant and substantial evidence available in the experimental field. It seems well established that hyperplasia as seen during the menstrual era is a direct resultant of anovulation and prolonged unopposed estrogen stimulation, with no evidence of corpus luteum formation or resultant progesterone activity. Clinically, hyperplasia is often seen at the menarche, not infrequently during the menstrual era, but most commonly in the immediately premenopausal years when anovulation is probably rather frequent. It seems likely that ovulatory failure is due primarily to pituitary deficiency, but space does not permit a full discussion of the well-known reciprocal estrogen and pituitary follicle-stimulating hormone interaction, which results in increases and decreases in the estrogen level. It is important again to emphasize the unopposed estrogen activity, whose action on the end organ, the endometrium, produces the pathological entity that we know as hyperplasia.

PROLIFERATIVE HYPERPLASIA

It is also important to point out that endometrial hyperplasia may arise spontaneously either in the menstrual era or in the postmenopausal patient; on the other hand, it should be emphasized that a similar picture may be produced at any age by estrogen therapy, often unwarranted and administered with complete lack of discretion. From a pathological standpoint the typical "swiss cheese hyperplasia" is readily recognized and affords no problem of diagnosis, although treatment may not always be satisfactory. Unfortunately we may find complex proliferative deviations from the picture of simple typical hyperplasia. A markedly adenomatous pattern with advanced degrees of stratification and tufting of the lining epithelium may be present. The epithelium itself may appear hyperactive with many mitotic figures and is apt to be tall, immature in appearance, often pale-staining, and at times suggestive of tubal epithelium. Actually, a point may be reached in these markedly atypical or proliferative hyperplasias where expert pathologists differ as to whether an early adenocarcinoma or a complex hyperplasia is present. It is exactly this group of cases that prompted the much-quoted phrase by an excellent foreign gynecologist, who, on seeing one of the microscopic sections in our laboratory simply shook his head and said, *"Nicht Karzinom aber besser heraus"* ("Although not cancer it is better to remove it"). Lastly, it should be emphasized that these proliferative hyperactive variants may be produced spontaneously or can be produced readily by exogenous estrogen at any age, even when the uterus is small, senile, and atrophic.

Typical of the commonly observed estrogen-induced hyperplasia was the case of a woman 72 years old, who was curetted because of postmenopausal bleeding. At the time the uterus measured 9 cm., and the abundant scrapings from the curettement were thought to represent an adenocarcinoma, grade 1. The family doctor telephoned to inquire about his patient, and on direct question he stated that he had been giving her 1 mg. diethylstilbestrol (Stilbestrol) daily for the preceding three months because of postmenopausal osteoporosis. Since the patient was a very poor operative risk, it seemed justifiable to simply discontinue the estrogen therapy and repeat the curettement. Three months later, no endometrium was obtained and the uterus measured only 5 cm. Subsequent check-ups have revealed no further symptoms. This type of case is so representative that our interns are advised to ask every patient with postmenopausal bleeding if she has been receiving any injections or other treatment for menopausal symptoms. When such a history is given, an expectant course may be adopted for at least a short period of time with only a minimal theoretical risk to the woman.

Prolonged and unopposed estrogen stimulation is a possible causal factor in the production of endometrial cancer. Actually there is nothing new about the potential carcinogenic action of the estrogenic steroids. In 1932,

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Lacassagne[1] succeeded in producing breast cancer in male mice by prolonged estrogen therapy. Females of this strain were susceptible to spontaneous breast cancer. This has been confirmed by others. Lipschütz[2] was able to produce fibromatous intraperitoneal tumors in guinea pigs by estrogen; these tumors, however, could not be produced if progesterone was administered, and they tended to regress if estrogen dosage were stopped. Gardner and Allen[3] were able to produce carcinoma of the cervix in certain strains of mice, but attempts to produce fundal carcinoma in animals have been uniformly unsuccessful. This may be due to the inevitable development of an aseptic pyometra in experimental animals treated with large amounts of estrogen.

THEORIES ON RELATION OF ESTROGENS AND ADENOCARCINOMA

The estrogen-adenocarcinoma problem has been studied from a number of different angles, which are briefly summarized in the following paragraphs.

Late Menopause.—A disproportionately high percentage of women having a late menopause, with resultant prolonged and often unopposed estrogen stimulation, is found among patients in whom adenocarcinoma later develops. In Randall's[4] series 35% of such patients had their menopause over 50 years of age, and Gusberg[5] found the menopause most frequent between 52 and 54 years in his study. In my recently published paper[6] dealing with postmenopausal adenocarcinoma only, the average at menopause of 64 patients was 51 years, including 6 patients in whom menopause was induced by irradiation at much earlier ages. Certain authors (Henriksen and Murrieta[7] and Marshall[8]) disagree with the significance of a late menopause in such patients and belittle its importance.

Castration.—Endometrial cancer developing after castration is rare, although a few cases have been reported. Indeed, Randall, Herrell,[9] Speert,[10] and others state they have never observed fundal adenocarcinoma to develop under such circumstances. Randall goes further in stating that he has never seen this disease where there is evidence of estrogen deprivation as manifested by vasomotor symptoms or senile vaginitis. Of course, one rarely leaves the uterus in a castrate woman today, but this policy has evolved in the last two decades.

Unopposed Estrogen Stimulation.—Many women in whom adenocarcinoma develops in postmenopausal years have had either a previous curettement showing hyperplasia or a history strongly suggesting previous unopposed estrogen stimulation, or both. Randall, Gusberg, and Speert have noted this, and the first two concur in feeling that this atypical history of bleeding increases the possibility of future adenocarcinoma by three and one-half times. Here again, there are many dissenters.

Feminizing Ovarian Tumors.—The high incidence of adenocarcinoma (15 to 20% in most series) or hyperplasia or both, in association with the estrogen-producing granulosa-cell and thecomatous tumors of the ovary has been discussed by many authors, including Ingraham and others,[11] Novak[12] and Masson, Dockerty, and Mussey.[13] Despite Emge's[14] recent dissenting paper, this association has always been regarded as the "spontaneous biological experiment."

Estrogen Therapy.—More and more cases are being reported in which there is a prolonged history of estrogen therapy and later development of endometrial cancer. About a year ago I reported such a case,[15] at which time a review of the literature revealed about 15 well-authenticated cases and other questionable ones. In view, however, of the widespread abuse of estrogens and the frequency of endometrial cancer, it would be unusual if the two did not, on occasion, coexist.

Association of Hyperplasia and Adenocarcinoma.—Particularly germane to this paper is the high incidence of postmenopausal hyperplasia and adenocarcinoma that has been found to coexist by such excellent gynecologic pathologists as Taylor,[16] Novak and Yui,[17] and others. On occasion, every gradation from a simple hyperplasia through more proliferative forms to frank adenocarcinoma may be found in the same patient, especially if the pathologist is discriminating though unprejudiced. This is particularly evident when there is a small lesion and when some intact endometrium is available for study.

These then are the chief clinicopathological reasons why estrogen is under suspicion as a possible causal factor in the development of fundal cancer; it should be obvious that much of the work is not decisive and should not be regarded as more than suggestive. A recent publication by Brewer and Foley[18] has stressed the relative infrequency of fundal carcinoma and hepatic cirrhosis and has thus interdicted the earlier work of Speert.[19] Estrogen is inactivated by the liver, and it might seem that a diseased liver, incapable of this function, would permit large amounts of estrogen to act upon the endometrium. However, estrogen is manufactured by the ovary, and unless unopposed estrogen is present, what does it matter if there is a competent detoxifying agent? There is no evidence that cirrhosis suppresses ovulation or progesterone formation, and many of Brewer and Foley's patients were in the menstruating age. Other women were postmenopausal, but not all such patients are subject to large amounts of circulating estrogen. While we will agree that Brewer and Foley may have refuted the frequent coexistence of cirrhosis and adenocarcinoma, it hardly seems justifiable to conclude that their study has diminished the credibility of the estrogen-endometrial carcinoma theory.

Hyperplasia, which we know is estrogen-induced, is a purely pathological term, and there is no need to dwell on its clinical implications. It may be a diffuse process involving the whole endometrium, or it may be limited to a polyp. It is by no means rare to remove a uterus for an incidental cause (ovarian tumor or pelvic inflammatory disease) and to find small patches of hyperplasia in conjunction with a generally secretory pattern, a type of mixed endometrium. This might suggest that certain uteri contain patches of endometrium incapable of responding to progesterone and thus subject to continuous unopposed estrogen stimulation. If this is true, it might explain the well-known work of Jones and Brewer,[20] who took issue with the estrogen theory by reporting a number of premenopausal patients with a fresh corpus luteum, a secretory endometrium, and an adenocarcinoma of the body. We have seen more than one patient with a fresh corpus luteum and a premenstrual endometrium; in one discrete area, however, there is an area of hyperplasia adjacent to an undoubted adenocarcinoma.

POSTMENOPAUSAL HYPERPLASIA

The typical hyperplasias of the menstrual era are rarely a pathological problem, but simple hyperplasia may also be seen many years after the menopause even in the absence of estrogen therapy and with no evidence of a feminizing tumor. This is true even in surgically castrate women, and it is felt that an extraovarian focus, such as the adrenal, may be the source of the estrogen. In 1941, a study of postmenopausal endometria was made by Novak and Richardson,[21] and almost one-half of these showed evidence of some estrogen activity, presumably adrenal in origin. Broders and Fahlund [22] concur in the proliferative tendencies of the postmenopausal endometrium but do not feel that the endometrium associated with, but uninvolved by, adenocarcinoma shows any greater proliferative tendency than that of the normal postmenopausal patient.

In 1948, Woll, Hertig, Smith, and Johnson [23] pointed out the high incidence of ovarian stromal hyperactivity in association with fundal cancer. A confirmatory study was carried out this year by Mohler and myself. Our cases were limited, however, to postmenopausal patients with endometrial adenocarcinoma who had not received x-ray therapy.[24] We were impressed not so much by a diffuse stromal hyperactivity as by patchy areas of focal hyperplasia in which the postmenopausal cells appeared large, pale-staining, polyhedral, and seemingly identical with theca cells. Fat stains were used on only a few, and these were equivocal. Despite attempts to be extremely critical, we found significant degrees of this ovarian stromal hyperplasia in 54% of 64 patients with adenocarcinoma and in 21% of a control group. One might well infer that the postmenopausal ovary is not always the functionless organ that it has been presumed to be. Perhaps it may be capable of rejuvenation, presumably by the pituitary, and thus act to circulate estrogen or similar steroids, although the available experimental evidence is against this hypothesis. In any case, the reason for stimulation by the pituitary is even more obscure, and we can do no more than theorize in this respect.

We felt it might be interesting to study the histological picture in ovaries associated with a postmenopausal endometrial hyperplasia (eliminating cases that were apparently induced by estrogen therapy). It was at once apparent that just as a large percentage of women with fundal adenocarcinoma are obese, hypertensive, diabetic, nulliparous, and have a history of a late menopause and previous menstrual irregularities, so a large number of the women with spontaneous postmenopausal hyperplasia had similar characteristics. We have not completed our statistics on the ovarian histological studies, but it would seem that our small group of some 35 cases will show a rather high percentage of stromal hyperplasia with theca-like changes in the cells, suggesting a possible estrogenic function. The similarity in concomitant physical findings as well as menstrual data in postmenopausal hyperplasia and adenocarcinoma certainly suggests that these conditions are simple variants of a similar and perhaps generalized metabolic process. Indeed it may imply that fundal adenocarcinoma may be only an exaggerated and advanced, though not inevitable sequence of postmenopausal hyperplasia.

TREATMENT

Only generalities can be laid down in the treatment of hyperplasia, for individualized treatment is a necessity. Typical hyperplasia in the menstrual era is never a problem (this, of course, is not always true clinically). Postmenopausal simple hyperplasia is more worrisome; if it is not unduly active and there is no evidence of an ovarian tumor, at least two curettements seem indicated before hysterectomy, which generally reveals that the hyperplasia has no invasive tendencies. Occasionally we find we have curretted around the base of a hyperplastic polyp without completely removing it, as mentioned recently by Scott.[25]

The more complex and active forms represent a much greater problem. The term "atypical hyperplasia" was coined in our laboratories, but the term "proliferative hyperplasia" seems more descriptive. Insofar as can be determined from photomicrographs, these adenomatous hyperplasias seem in no way different from what Speert [26] refers to as the premalignant phase of endometrial cancer, and they also resemble what Hertig and Sommers refer to as adenocarcinoma in situ. With all due respect to these excellent pathologists, we are not in complete agreement with their terminology. Epidermoid cervical cancer in situ is a distinct entity that one can see microscopically; if invasion of the stroma or lymphatics is present, it can be observed. Fundal adenocarcinoma is not a comparable disease. Curettement cannot show if myometrial invasion is present, and stromal invasion in the lower grades of adenocarcinoma is practically impossible to ascertain. All of us have seen many histological grade three or four tumors where hysterectomy shows no apparent myometrial involvement. Adenocarcinoma of the body is an entirely different type of cancer, often a notorious "surface rider," and thus the term adenocarcinoma in situ seems to us to be unjustified.

In a few respects it seems permissible to compare cervical intraepithelial cancer and the equivocal forms of proliferative hyperplasia. There are few who doubt the validity of the lesion cervical carcinoma in situ and its capacity to progress into true invasive cancer. Yet the feeling grows that there are many similar morphologically indistinguishable lesions that may regress to normalcy without radical treatment. Pregnancy affords the best-known example; infections have also been observed to produce hyperactive cervical architecture, and the as yet uncertain role of the endocrine glands may prove to be a major one. Certainly pathologists see endometria with proliferative hyperplasia where a diagnostic curettement has resulted in apparent cure without recurrence for more than 10 years. In 1948, Novak and Rutledge [27] pointed out the similarity between these proliferative hyperplasias and fundal adenocarcinomas and reported 44 cases. Eighteen patients had curettement with or without irradiation castration. Although this is hardly the ideal treatment for even an incipient cancer, all patients have stayed well except one in whom fundal cancer developed 15 years later. Of 26 patients having a simple total hysterectomy without irradiation (following diagnostic currettement), not one was found to have gross evidence of adenocarcinoma or microscopic evidence of myometrial invasion.

Nevertheless, no one should belittle the potential importance of the proliferative hyperplasias, and there seems little doubt that they should be regarded cautiously. Previous mention has been made of the high association of postmenopausal hyperplasia with endometrial adenocarcinoma (perhaps 25%); furthermore, there is no question that these active hyperplasias can and do progress to the point where even expert pathologists disagree as to their malignancy. In these cases, fortunately, the problem is usually academic, for whether the hyperplasia is benign or malignant, hysterectomy is much the safest course. Preliminary irradiation is probably unnecessary and will spoil the pathological specimen.

It is well established that genuine carcinoma may have been preceded by a curettement months or years before, at which time a proliferative hyperplasia was found. Speert,[26] Hertig and Sommers [28] and, more recently, TeLinde, Galvin, and Jones [29] have reported this sequence with substantial numbers of cases. Yet it would seem preferable to think of proliferative hyperplasia as potentially malignant rather than anything like adenocarcinoma in situ. Speert has aptly stated: "Glandular hyperplasia of the endometrium is a common precursor of carcinoma, but carcinoma occurs in only a small proportion of women with endometrial hyperplasia." In other words, the disease may frequently be a simple self-limited process that is apparently arrested by a curettement or perhaps is arrested spontaneously. Other identical cases may not regress and may ultimately unfold into genuine cancer. No one can predict which course will be followed or is able to recognize the earliest transition from the questionably benign to the definitely malignant. Perhaps no pathologist will ever be able to accomplish this any more than one can absolutely predict the prognosis of the potentially malignant group of ovarian papillary serous tumors; it would seem that histochemical differential stains, as yet undeveloped might be needed to give a final answer.

This uncertainty regarding the outcome is justification for the operative procedure of hysterectomy in these equivocal cases. Although one may perhaps feel that a lesion is benign, he cannot be completely certain and will not jeopardize the patient by expectant treatment. It would of course be scientifically ideal to follow a group of these proliferative lesions with no other treatment than periodic diagnostic curettement, but this would certainly entail considerable risk. In patients in whom the endometrial proliferation has not reached the extreme stage, repeat curettements at three or four months intervals seem feasible and should be mandatory in the rare young woman who shows an active hyperplasia. When the disease is persistent and especially when it is increasing in atypia, hysterectomy is indicated for the safety of the patient and possibly the morale of the attending doctor.

SUMMARY AND CONCLUSIONS

A brief review is presented of the evidence for the view that estrogens may play an inciting role in the evolution of adenocarcinoma. That exogenous estrogens can produce microscopic patterns indistinguishable from early endometrial cancer and that estrogens cause hyperplasia would seem to leave no doubt. Yet even if we should accept as facts (1) that postmenopausal hyperplasia is related to the development of fundal cancer and (2) that estrogens can produce this hyperplasia, it would still be an unjustifiable syllogism to conclude that estrogens definitely cause adenocarcinoma. One must never forget the importance of the genetic and often-observed familial predisposition to cancer. This genetic factor is too prevalent to ignore, despite our ignorance as to how it works. Despite the lack of proof that estrogens play a definite role in the production of breast or fundal cancer, it would seem advisable to be particularly sparing in any use of estrogens when there is a strong hereditary background of cancer.

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Hormones in Elderly Patients.—It is agreed that hormones are not made in as large amounts in old age as in younger ages. One must determine whether such decrements cause trouble, and to explore the legitimate value of hormone supplements as well as to be conscious of the harm that they can produce. What good can be accomplished by the male-sex hormone in old men that cannot be accomplished by facing facts and improving physical fitness, even when cancer of the prostate is alleged to be absent? What are the indications for female-sex hormones in women apart from alleviation of menopausal distresses? The unregulated use of them in a few women has seemed to enhance their hypertension. Although the basal metabolic rate falls in aging people, myxedema is rare; what symptoms can be attributed to the hypometabolism, and which of them can be safely controlled by thyroid, granting that coronary-artery disease and angina are not present? It appears to be wise to bring an elderly diabetic patient under insulin management slowly and to use as small doses as possible, because abrupt changes in blood sugar are not infrequently attended by coronary-artery or cerebrovascular accidents and because mental performance is more erratic in such patients vigorously treated. Particular caution must be exercised in administering ACTH and cortisone to old people because disasters due to salt and water retention and to the creating of hypertension are common. It is unfortunate that they have been extended to the general medical public while their therapeutic status in research clinics is not settled.—R. T. Monroe, M.D., The Effect of Aging of Population on General Health Problems, *The New England Journal of Medicine*, Aug. 13, 1953.

MECHANISMS OF CUTANEOUS DRUG REACTIONS, ESPECIALLY TO ANTIBIOTICS

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Voltaire allegedly once defined a physician as "one who pours drugs about which he knows little into a body about which he knows less." Unfortunately, this somewhat cynical definition still has a large measure of truth to it in that too often reactions that are neither anticipated nor desired make their appearance. It is the purpose of this article to consider the mechanisms by which cutaneous side-reactions are produced. It is our impression that, as a rule, when a patient takes a drug and develops a reaction, cutaneous or otherwise, the glib assertion is made that the patient is allergic to the drug without any proof being brought forward to support the correctness of this designation. While there is no doubt that many reactions are based on allergic mechanisms, possibly oftener they are not; and we wish to emphasize the variety and pathogenetic diversity of the means by which cutaneous reactions can be produced. We consider the unthinking application of the tag "allergic" adds nothing to our knowledge and actually impedes progress by failing to distinguish between pathogenetically unrelated conditions.

At this point we should like to explain our use of the terms "reaction" and "side-reaction." While this may be somewhat loose terminology, we shall employ the terms interchangeably to denote the development of signs or symptoms other than those intended, in other words, an effect other than the one for which the drug was given therapeutically. This label conveys no implication as to the means by which the reaction was produced; indeed, it is well to remember that many so-called side reactions are normal pharmacological effects of the drug in question, possibly developing at a slightly higher dose range. We, as already stated, will confine ourselves primarily to the cutaneous reactions.

MECHANISMS

Table 1 outlines various mechanisms by which cutaneous drug reactions may arise. We wish to state unambiguously at the outset that certain of these mechanisms are quite speculative. Possibly still more pertinent is the fact that, even though there may not be any doubt as to the existence of a specific mechanism, the proof of its relationship to the development of a particular clinical entity may be exceedingly tenuous. It should also be realized that the line of demarcation between some of them is quite arbitrary. Further, many of the mechanisms are not mutually exclusive, so that a given clinical effect may develop in more than one way or actually may require the coexistence of more than one mechanism for its development. It should also be clear that certain of the conditions cited as examples of a given pathogenesis might be considered by others to be brought about by another. Finally, it is highly probable that there are mechanisms other than those given in table 1.

We wish it clearly understood that in table 1 the drug selected as an example of yielding a given clinical manifestation is, as a rule, only one of many that could have been chosen to illustrate the point. For example table 1 mentions penicillin as producing urticaria via an allergic reaction of the immediate type. It goes almost without saying that almost any drug known can produce urticaria by this means. With certain of the examples, e. g., erythema nodosum via a biotropic mechanism, there is considerably more constraint in the choice of a suitable drug, but in general there is quite some latitude in this regard. This article will make no attempt to enumerate all the drugs that could produce reactions by the mechanisms listed. We also wish to make it quite plain that the clinical manifestations given as illustrating a possible effect of a certain drug are not the only clinical effects that can appear after ingestion of that drug. This should be self-evident, as table 1 lists more than one manifestation for some of the drugs and such examples could have been multiplied many times.

Following is our effort to define more explicitly what we mean by the various captions in table 1. We realize that we are not using certain of the terms in their strict pharmacological sense, but we are writing from the point of view of clinicians and for clinicians. We believe that the concepts as we state them have utilitarian value for this audience.

Pharmacological Mechanism.—By the pharmacological mechanism is meant an effect that would develop in anyone who took the drug in adequate dosage for a sufficient length of time. In other words, there is a predictable dose-response effect. Such relationships are the basis of modern quantitative pharmacology. We are employing the term to denote a cutaneous reaction that presumably for the above reasons is predictable, i. e., the physician can tell the patient that such and such will develop even though that was not the reason the drug was employed. This designation conveys no implications as to the means by which the effect was achieved, and hence this caption subsumes all types of pharmacological reactions in which there is a known dose-response relation. Table 1 gives two examples of this. Others are the gangrene after large doses of ergot and the yellowish discoloration of the skin caused by the ingestion of quinacrine (Atabrine).

Enzymic Interference.—For a proper understanding of the mechanisms by which cutaneous reactions are produced, it would be necessary to consider all the ways by which drugs achieve effects.[1] This is obviously beyond

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our scope and that of the paper. In view of this, certain of the captions, as this one, will be used in a large, general sense rather than in their more narrow, restricted pharmacological meaning.

It is quite probable that many drugs produce their usual pharmacological effect by means of affecting an enzymic system. Wills[2] states: "Drugs altering the gross activities of cells must alter in some way the metabolic processes of those cells. It is an attractive hypothesis to say that they do so by selective toxicity for some enzyme involved in the intermediary metabolism of the affected cell. There is a certain amount of evidence in favor of this view. Many drugs have been found to alter enzymatic activity; in some cases such effects can be used to explain in whole or in part the biological activity of the compound tested." Danielli[3] also makes this point and considers in detail the various ways in which drugs and enzyme systems may interact.

Table 1.—*Mechanisms by Which Cutaneous Drug Reactions May Develop*

Mechanism	Drug	Clinical Manifestation
Pharmacological		
Acute	Nicotinic acid	Erythema
Chronic	Silver salts	Argyria
Enzymic interference		
Competition	Mercury Gold	Acrodynia Seborrheic-like dermatitis?
?	Sulfonamides	Light sensitivity
	Arsenic	Keratoses
Intolerance or idiosyncrasy	Iodides Bromides	Nodose fungating lesions
Allergic		
Immediate type		
Acute	Penicillin	Urticaria
Chronic	Sulfonamides	Polyarteritis nodosa
Delayed type		
Eczematous	Arsphenamine	Exfoliative dermatitis
Bacterial	?	"Ids"?
Shwartzman	Barbiturates	Purpuras
Herxheimer	Penicillin	Dysidrosiform eruptions (penicillids)
Ecologic	Chlortetracycline	Monilial overgrowth
Biotropic	Sulfathiazole	Erythema nodosum

We are, however, distinguishing between this category and the preceding one, in that in this one the "enzymic interference" produces an effect neither anticipated nor desired. There are many ways (Danielli[3]) by which a drug can affect an enzyme system, but we shall mention only two, as these two seem to be the commonest in the production of side-reactions. A drug may "poison" a given enzyme system or the drug may compete with the system for a component so that the proper functioning of the given enzyme system is impaired. It is our impression that such effects, while not too well understood, possibly play a more important role in the genesis of various drug reactions than has hitherto been realized. In general, explicit knowledge about the enzyme system affected is lacking, but in a few cases there appears to be exact information. Thompson[4] in an interesting article dealing with the enzyme systems of the skin states: "The pyruvate oxidase enzyme system is therefore one of the essential enzymic components of the skin cells, and its inhibition by compounds of gold, mercury, arsenic, and possibly other compounds also, affords a metabolic explanation of the skin lesions produced by these compounds." It is possible that many of the cutaneous manifestations that are ordinarily labeled as toxic fall here. Hughes[5] has speculated at some length on such possibilities. When a drug produces a reaction by acting as an antimetabolite, we would also place it here in this category.[6]

Intolerance and Idiosyncrasy.—Intolerance is defined as quantitative deviation in response to a drug in contradistinction to idiosyncrasy in which there is a qualitatively abnormal response. For example, ringing in the ears will develop in anyone if enough quinine is taken, but in some persons it will develop after ingestion of relatively small amounts of quinine. Such persons would be labeled as intolerant of quinine. The mechanism for such intolerance is not known. Occasionally certain disease states cause patients with these diseases to be much more sensitive (intolerant) to specific drugs. An example of this is the sensitivity of patients with myasthenia gravis to tubocurarine cited by Pelikan, Tether, and Unna.[7] From the point of view of cutaneous reactions, we do not know of any that clearly develop because of an intolerance; consequently, we shall consider this with idiosyncrasy, as some of the examples cited do not definitely fall into one or the other category.

Idiosyncrasy is a word of ancient lineage in medicine but of difficult definition. Rolleston[8] in his interesting little monograph on "Idiosyncrasies," has considered the history of this word and the various ways in which it is used. We define it as an inborn (though not necessarily evident at birth) susceptibility or predisposition to give a qualitatively abnormal response to a specific exogenous stimulus either chemical or physical, and such response is not based on an antibody mechanism. By the word "exogenous" we propose to exclude abnormalities of the type that were collected by Garrod[9] under the felicitous title of "Inborn Errors of Metabolism."

One of the known effects of inorganic arsenic is the stimulation of keratin formation. However, in some persons arsenic apparently, in smaller doses or in a lesser time, causes an excess of keratin to be formed in a condition we label as keratosis. We suggest that such persons have an idiosyncrasy (or intolerance) to arsenic in that they have an inborn predisposition to form excess keratin when they ingest arsenic. Turning to side-reactions from iodides and bromides, it is well known that the development of these is very capricious. Some persons apparently can tolerate huge doses for indefinite periods of time with impunity, whereas in others a variety of cutaneous manifestations develop. Admittedly, the means by which these manifestations are produced is very uncertain, and indeed it is possible that the various cutaneous lesions are brought about by different mechanisms. Many believe that some, if not all, of the reactions to bromides and iodides are based on an allergic mechanism. So far as we know, no evidence has ever been adduced to support this view. To us the hypothesis of idiosyncratic or intolerant persons seems to fit better the known facts. It is reasonably well established that in all persons a certain amount of these halogens is excreted via the sebaceous glands and follicles. We postulate that there are inborn differences in the tolerance of sebaceous glands and follicles for the halogens. Some persons, because of their differences, have a low tolerance for these substances and will react by developing the cutaneous manifestations already alluded to.

Dragstedt,[10] in an excellent article, discusses some of the nonallergic idiosyncratic mechanisms by means of which certain drug reactions may be produced. This article should be read in the original by all those interested in this question.

Allergy.—Allergy, in our opinion, is best defined as a specifically acquired alteration in the capacity to react, brought about by means of an antibody mechanism. It is our conviction that unless the term "allergy" is restricted to those phenomena that develop because of an antibody mechanism, it becomes so all-embracing a concept as to be meaningless. For example, the tolerances acquired towards alcohol, morphine, and other drugs are specifically acquired forms of altered reactivity and would come under the definition of allergy if the postulate for an antibody mechanism were not included. On the other hand, it should be realized that demanding the existence of an antibody system does not necessarily mean that circulating antibodies be demonstrable. In fact, this demand requires some revision of conventional concepts regarding antibodies.

Burnet[11] has hypothesized that the specificity of antibodies arises because the antigen gets to the site of globulin synthesis and there causes an enzymatic adaptation in the system concerned with the synthesis of globulin. As a consequence of the adaptation, the globulin manufactured has certain changes imposed upon it, presumably structural modifications, which are in turn evidenced as an ability to react with the material that originally caused the enzymatic adaptation, or, in other words, the antigen. Rostenberg and Brunner[12] have gone one step further and have suggested that the essential basis of sensitization is the adaptation of an enzyme system. If the system in which the adaptation takes place is one concerned with the synthesis of globulin, then a consequence of the adaptation will be the formation of globulins with certain new properties; in other words, circulating antibodies will be demonstrable. If, however, the adaptation occurs in a system or cell not concerned with the synthesis of globulin, then circulating antibodies will not be demonstrable by conventional techniques; however, the cells in which the enzymic adaptation has taken place are capable of betraying their altered reactive capacities provided proper test conditions are set up. Such conditions are the passive transference of the delayed type of allergic hypersensitivity by means of living white blood cells or the altered reactivity of the appropriate cells derived from an animal in whom the delayed type of reactivity exists when exposed to the antigen in vitro.

It should be realized that there are two major subdivisions of allergic sensitizations. The usual names given to the two subdivisions are the immediate and the delayed types. These terms refer, of course, to the time required for the allergic reaction to make its appearence in the already sensitized person when he again encounters the allergen. In addition to the time at which the reaction appears, there are other important immunologic differences between the two types. As might be inferred from the preceding discussion, in the immediate variety circulating antibodies are usually present. These can as a rule be detected by means of a precipitin test or by passive transference. In the delayed type circulating antibodies are not demonstrable. There are additional fundamental immunologic differences between the two types,[13] but space does not permit us to consider these further. A final point worth stressing is that the two types are not mutually exclusive. Indeed, it is probable that when a person exhibits delayed type of sensitivity to a given antigen he also has an immediate type of sensitivity to the same material, but the reverse is not necessarily true.

Considering the application of the two types to clinical entities, we wish to mention that allergic urticarial lesions and "serum sickness" reactions arise because of an immediate type of sensitivity; on the other hand, allergic eczematous contact eruptions develop through a delayed type of sensitivity, as do also "id" reactions. Before leaving this subject, we should like to point out that clear unambiguous correlations between clinical manifestations and underlying theoretical immune mechanisms can on the whole not be made.[13]

Shwartzman Reaction.—The Shwartzman phenomenon is, we feel, a potentially important phenomenon in medicine in general that has not received sufficient attention as a possible explanation for various hemorrhagic cutaneous reactions.[14] Very briefly, the Shwartzman phenomenon is a two-stage process in which the first stage consists of preparing the tissue (in this discussion we shall confine our remarks to the skin) and the second stage consists of eliciting a reaction in the already prepared tissue. It has been shown that a wide variety of bacterial substances are capable of acting as skin preparatory factors. The essential features of the Shwartzman reaction are shown in table 2.

TABLE 2.—*Essential Features of Shwartzman Reaction*

Preparation	
Site of Injection	Material Injected
a. Into skin b. Into vascular system of an organ c. Into general circulation	Bacterial products
Incubation Period of 12 to 24 Hours	
Elicitation	
Intravenous injection	Bacterial products Antigen-antibody complexes

From the point of view of this discussion the important eliciting material is the antigen-antibody complex. An experimental sequence of events that illustrates its role in the production of the Shwartzman reaction is as follows:

1. Egg albumin is injected in one animal, and nothing is done to another animal.
2. Three weeks later a Shwartzman preparatory filtrate is injected intradermally in both animals.
3. Twenty-four hours later egg albumin is injected intramuscularly in both.
4. Four hours later a hemorrhagic necrotic lesion develops at the site that received the intradermal injection in the first animal, and no lesion develops at the site that received the intradermal injection in the other.

It goes without saying that in many infections organisms and/or their products are rampant in the host and could produce prepared cutaneous sites without yielding any overt sign. Assume then the patient is given some medication to which he has an allergic sensitivity by virtue of a previous exposure; an antigen-antibody reaction will ensue, which in turn is capable of provoking a hemorrhagic necrotic reaction in the prepared site.

Herxheimer Reaction.—By a Herxheimer-like (also known as Jarisch-Herxheimer) effect is meant that a drug causes exacerbation of existing lesions or development of new ones, either because it too vigorously destroys the organisms for which it was used or because it has such a wide bactericidal spectrum that it kills many organisms besides the one for which it was used. In either case, in response to this wholesale slaughter, products are released that may be inherently toxic or to which the host may be allergically sensitive. In the former event, a nonallergic reaction arises because of the inherent irritancy of some of the released bacterial materials. In the latter case, an allergic reaction develops because of a sensitivity to the released micro-organismal allergens. It is our impression that some of the dysidrosiform eruptions seen after the giving of penicillin, which may be called "penicillids," may fall into this category. It has been noticed that oftentimes on the readministration of penicillin patients do not again manifest this type of eruption. It has been asserted that they have become desensitized. We believe that this may be an erroneous interpretation. The probabilities are that an allergic sensitivity to the penicillin never existed. The eruption developed in the first instance either because the penicillin destroyed enough organisms to release materials to which the host was allergically sensitive and hence the reaction, or the released materials were toxic enough to cause a reaction. In either case, the reaction did not arise because of an allergic sensitivity to penicillin. The failure to manifest the reaction on readministration of the penicillin would be explained on the basis that the same flora no longer existed or was quantitatively so reduced that, when the penicillin was again given, the same bacterial products either could not be released or only in inadequate amounts.

Ecologic Mechanism.—Ecology is an important division of the study of botany and zoology. By it, in brief, is meant a study of the individual in relation to its environment. Specifically, when a plant is considered from the point of view of ecology, all of the following points are important: the climate and the soil of the area in which the plant grows and the other plants growing in that area, particularly plants of other species that are competing with it for an existence. The bacteriologist has become increasingly aware of the importance of interspecies competition, primarily because the antibiotics have brought such inter-relations very much to the forefront.[15] We are all aware of the increasing incidence of moniliasis in patients who have received antibiotics, especially broad spectrum antibiotics. That this is not just an academic issue is attested to by the rapidly mounting number of reports dealing with this problem. It is also not a complication to be taken lightly, as there are a growing number of cases in which such intercurrent infections have proved fatal.[16] More recently it has been suggested that Proteus and Pseudomonas infections are likely to develop in patients who receive certain antibiotics.[17] Now, while the exact explanation of these infections cannot be stated with certainty, it would appear that a likely explanation is that the antibiotic, by virture of destroying certain organisms, has rendered conditions more propitious for the growth of others. It is well known that many of the organisms mentioned can be found in everyone, seemingly living as harmless saprophytes, but under conditions of relatively unrestricted multiplication a saprophyte may assume pathogenic qualities.

Biotropic Mechanism.—Formerly, "erythema of the ninth day" was seen not too infrequently when syphilis was treated with the arsphenamines. Various theories were adduced to explain this syndrome, and we shall not go into these here except to consider one of them, namely, the theory of biotropism of Milian.[18] Milian, in brief, postulated that all bacteriocidal drugs have a dual effect: (1) a necrotropic effect and (2) a biotropic effect. By the necrotropic effect of a drug was meant its lethal action on certain micro-organisms. By the biotropic effect was meant that the same drug would have a stimulating effect on other micro-organisms. Thus, while a drug might be used for its necrotropic effect on a specific micro-organism, one would inevitably get its biotropic effect on certain other micro-organisms that happened to be present. For example, Milian said that the scarlatiniform eruption seen after administration of the arsphenamines was not really scarlatiniform, but was actually scarlatina. In other words, the arsphenamine had caused latent Streptococcus scarlatinae to flourish.

While most workers in this country did not agree with Milian's views regarding the pathogenesis of erythema of the ninth day, in recent years there would appear to have developed some evidence for the theory of biotropism. Most so-called biotropic effects are probably explainable on the grounds of an ecologic interference or imbalance such as was considered in the previous section, but some would appear to be examples of the phenomenon that Milian suggested. A case in point appears to be erythema nodosum developing after sulfathiazole therapy. The usual explanation that the erythema nodosum is an expression of the development of a sensitivity to the sulfonamide does not seem to be valid in that in many of these patients the efflorescence develops only after ingestion of a specific sulfonamide, namely, sulfathiazole and not after ingestion of any other sulfonamide. It is reasonably well-established that with most allergic sulfonamide drug eruptions there is a fair degree of cross reactivity. It has therefore been suggested by Doxiadis and McLean,[19] Rollof,[20] and others that the erythema nodosum seen after the ingestion of sulfathiazole is not an expression of a developing sensitization to the sulfonamide, but rather an indication of a sensitization to a latent micro-organism that the drug has stimulated into activity.

We do not propose to go into the morphology of drug eruptions, inasmuch as we believe this is adequately covered in many articles. Two good reviews were made recently by Beerman [21] and Carr.[22] An excellent older review is that of Abramowitz.[23] We would merely like to point out that the appearances of drug eruptions are protean and bizarre. It is also more than likely that, with a better understanding of the mechanisms that we have discussed, more and more cutaneous manifestations will be shown to be caused by drugs, either directly or indirectly. It therefore behooves all physicians to have an exaggerated "bump of suspicion" regarding the possibility of any cutaneous lesion being a drug eruption.

REACTIONS TO ANTIBIOTICS

It would scarcely be an over-statement to assert that antibiotics have assumed a leading position in the physician's armamentarium. Indeed they seem to have revolutionized, in the literal meaning of the word, therapeusis in that one now prescribes first and then attempts to determine what one has been prescribing for. We hasten to add that we decry this technique, but in a consideration of drug reactions it is well to realize the ubiquity of use and the casualness of attitude towards the prescribing of the antibiotics, especially the newer, broad spectrum ones. Parenthetically, it appears that the medical profession is now beginning to reap its harvest from a population allergically sensitized to penicillin. It may, therefore, not be amiss to consider in some detail the various types of cutaneous reactions that have so far been reported developing as after antibiotic therapy. We should also like to predict that as yet undescribed ones and increasingly severe ones will make their appearance as more and more of the population become exposed. In view of the importance of the topic, we hope we will be pardoned if there is some repetition of matters already alluded to in a general way.

We shall consider the cutaneous reactions to the antibiotics according to the clinical patterns observed. We shall also endeavor, but, as will be seen, in a very imperfect way, to correlate the various clinical patterns with specific theoretical mechanisms.

CLINICAL VARIETIES

Urticarial or Serum Sickness Type.—Clinical Characteristics: Clinical characteristics of the serum sickness type of reaction include more or less generalized urticaria, urticarial erythema, or multiform erythema-like eruption, which is occasionally associated with angioneurotic edema or purpura. Moderate to marked constitutional symptoms exist in patients with more florid eruptions. Recently an increasing number of acute fatal anaphylactic reactions have been observed after administration of penicillin.[24]

Associated Considerations: In patients who have not previously received the medication, the onset of the eruption is delayed from a few to many days after the institution of therapy. This is the incubation period for the sensitization. Once established, the eruption becomes rapidly worse if administration of the medicament is continued. Symptoms may be promptly reelicited, after subsidence, by small doses of the antibiotic in question. This may be a very dangerous procedure and is not advised. Skin tests with the antibiotic in the earlier reports were often negative, but in more recent severer reactions both direct and passive transference tests have been positive.

Antibiotics Associated with Serum Sickness: This manifestation has been associated with therapy with penicillin, streptomycin, chlortetracycline (Aureomycin), oxytetracycline (Terramycin), and chloramphenicol. Penicillin is, of course, the most important, but this may be merely a reflection of the far greater use of penicillin rather than an indication that it is inherently more antigenic. We also believe that the parenteral use of a drug increases the likelihood of an allergic sensitization. There is also available much evidence that the forming of a depot from which there is slow absorption favors the development of a sensitization. These reasons may also partly explain the lesser incidence with the last three antibiotics listed.

Mechanism: This reaction would seem clearly to be a manifestation of the immediate type of allergic sensitivity. Penicillin or whichever antibiotic is involved acts as a hapten and conjugates with a body protein to yield the complete antigen. Circulating antibodies may be demonstrable.

Erythema of the Ninth Day Type.—Clinical Characteristics: Clinical characteristics of erythema of the ninth day type include more or less generalized macular, maculopapular, morbiliform, rubeoliform or scarlatiniform eruptions, as a rule accompanied by very mild or constitutional symptoms or none at all.

Associated Considerations: The reactions commonly appear 7 to 10 days after institution of the original course of therapy. Some patients have tolerated cautious continuation of the antibiotic; the conditions of others have become progressively worse if medication was continued. In a few patients with this type of reaction the antibiotic has been readministered after recovery. Of these, some have had a recurrence of the eruption in a shorter time and with smaller dosage and others have had no recurrence of the lesions.[25] In the few cases in which skin tests have been done, the results have been negative.

Antibiotics Associated with this Reaction: Erythema of the ninth day type is reported to have occurred with penicillin, streptomycin, chlortetracycline, and chloramphenicol therapy.

Mechanism: It would appear that there may be two pathogenetic types of this reaction. Some are probably mild forms of the serum sickness type. Others seem to differ in regard to toleration of continuation of therapy and the failure to reelicit the eruption by readministration of the antibiotic after subsidence. The latter instances may be examples of Milian's biotropism or more likely of an ecologic interference.

"Id" Type.—Clinical Characteristics: Clinical characteristics of "id" reactions include erythematovesicular, eczematoid, and desquamating eruptions, chiefly of feet, hands, and groins, associated with moderate subjective symptoms. They are rarely associated with constitutional symptoms.

Associated Considerations: The onset is early in the course of treatment often within 24 hours. The eruption is markedly aggravated by continuation of the therapy. Many of the patients have a history and/or findings indicative of an antecedent dermatophytosis. A patient observed by one of us (J. R. W.) exhibited sensitivity of the tuberculin type to the antibiotic after subsidence of the eruption. This type of reaction has been reported with penicillin and chlortetracycline therapy.

Mechanism: Various theories have been advanced to explain this type of reaction, but none of them is very satisfactory. This type has been seen mainly following penicillin therapy and the following discussion centers on this drug; however, it is obvious that many of the remarks apply equally to other antibiotics. First, it would seem to be definite that many persons with this variety of reaction have a delayed tuberculin type of sensitivity to penicillin. Second, it is clear that this type of allergic response to penicillin can be demonstrated in persons who have never previously received penicillin.[26]

These facts bring two questions to mind: 1. Does the fact that a person has delayed tuberculin type of sensitivity to penicillin necessarily mean that he will have some sort of reaction when he is exposed to penicillin? 2. If a person has never encountered penicillin, how can one explain the reactivity to it?

As far as the answer to the first question is concerned, no unequivocal statements can be made, inasmuch as, to our knowledge, there has been no deliberate study of this point. However, it would appear likely that a person who has developed an allergic sensitization, as evidenced by the delayed type of reaction, would necessarily develop some sort of reaction when exposed to the antigen. Whether or not this reaction would be grossly evident would seemingly depend on quantitative factors, that is, primarily on the amount of penicillin he received.

As far as the second point is concerned, various theories have been advanced, but there is not very much evidence to support any of them. First, most persons have been exposed to the mold Penicillium. It is theoretically possible that some of the strains of Penicillium to which they were exposed were penicillin elaborators, and it may be because of this that they developed a sensitization to penicillin. Other theories are that there is a penicillin-like material in pathogenic fungi belonging to the Trichophyton genus. Because of the ubiquity of these, the sensitization to penicillin develops. It may, however, be pointed out that there is no good correlation between the delayed tuberculin type of sensitivity to penicillin and sensitivity to trichophytin. A final possibility is that the penicillin, when injected, tends to localize preferentially in preexisting areas of fungous involvement. If the patient is sensitive to the penicillin, the reaction will then predominantly take place in such areas; hence the distribution of the lesions and the pseudo-flare-up of preexisting fungous lesions.

Fixed Eruptions.—Clinical Characteristics: Fixed eruptions consist of well-defined areas of erythema, edema, and scaling that subside slowly when the drug is withdrawn, leaving residual pigmentation. There is recrudesence in the same areas on readministration.

Associated Considerations: In one case patch tests on normal areas and intradermal tests on normal and involved sites were negative.[27]

Antibiotics Associated with Fixed Eruptions: Fixed eruptions have been observed after administration of streptomycin, chlortetracycline, and oxytetracycline. In two cases on record the eruption, which was originally elicited with chlortetracycline, was reelicited in the same areas on administration of oxytetracycline.[28] All the evidence points to the fact that chlortetracycline and oxytetracycline are essentially the same molecules; hence it would not be surprising from the immunologic standpoint that they cross react. This type of eruption is so far much less frequent than the previous three types.

Mechanism: We do not believe there is much that can be said about the immunologic background of fixed eruptions, whether they are brought on by an antibiotic or by one of the more usual causes, e. g., phenolphthalein or a sulfonamide. These reactions are usually interpreted as allergic and, while we have no quarrel with that interpretation, we should like to emphasize that it is a purely speculative inference.

Early Evanescent Eruptions after Large Initial Doses.—Clinical Characteristics: A reaction seen after large initial doses of antibiotics consists of evenescent macular, papular, and papulovesicular eruptions. They often appear rapidly, with subsiding constitutional symptoms such as fever and even a shock-like picture.

Associated Considerations: These eruptions appear soon after institution of therapy (often within 24 hours) if the initial dosage is large. The questions of previous exposure to antibiotics and other allergic sensitivities are not significant. There may be a history of chronic bacterial infection such as chronic recurrent furunculosis. Symptoms usually subside quite promptly, even with continuation of therapy with the antibiotic. The symptoms are not reelicited by subsequent therapy with the antibiotic.

Antibiotics Associated with Early Evanescent Eruptions: Parets [29] mentions this type of reaction in connection with chlortetracycline. One of us (J. R. W.) has encountered it in a patient with recurrent furunculosis to whom 600,000 units of long-acting penicillin were administered.

Mechanism: It would seem reasonable to ascribe this type of manifestation to a Jarisch-Herxheimer reaction. This phenomenon has been generally accepted as an explanation of the exacerbation of syphilitic lesions seen in treating that disease with potent spirocheticidal drugs. The same explanation could obviously apply in any condition where large numbers of organisms were suddenly destroyed, liberating either an antigenic or a toxic substance. The early evanescent eruptions that subside during continuation of therapy we believe are explainable on this basis.

We think it is important to be aware of this mechanism, inasmuch as there are several reports in the literature of what to us were reactions of this nature and then with subsequent administration of penicillin the reactions did not develop. It was asserted that these persons were allergic to the penicillin but had either become spontaneously desensitized or deliberately so by some procedure that might have been employed. We think this concept is erroneous. If our views are correct, the persons exhibiting this type of reaction were never sensitive in the allergic meaning of the word, and the reason they did not have a reaction on readministration of penicillin is that adequate amounts of a suitable flora were not present. On the contrary, we feel that a patient who is truly allergic, that is, a person who has a serum-sickness type reaction from penicillin, will almost certainly have the same reaction again on readministration and possibly in a severer form. Consequently, it is important not to confuse the two types of reactions, because we do not believe that the truly allergic person can be desensitized, at least in any easy fashion, so that he would again tolerate penicillin.

Eruptions in and About the Mouth.—Clinical Varieties: Eruptions in and about the mouth include erythematous and vesiculopapular eruptions of the buccal and pharyngeal mucous membrane. The black, hairy tongue is rare.[30] Maceration and fissuring at oral commissures may occur, at times with associated dyssebacea in the nasolibial folds.

Associated Considerations: Buccal and pharyngeal eruptions are often associated with varying degrees of discomfort. They may appear as early as 48 to 72 hours after the beginning of therapy.

Antibiotics Associated with Mouth Eruptions: This type of eruption is seen especially in connection with the wide spectrum antibiotics It has also been seen with orally administered penicillin.[31]

Mechanism: We believe many of the eruptions in and about the mouth develop because of an ecologic imbalance, a concept to be discussed more fully.

Eruptions of the Anogenital and Other Intertriginous Areas.—Clinical Types: Eruptions of intertriginous areas may consist of slight erythema associated with severe burning and/or pain. Another type is eczematous dermatitis of the type commonly referred to as infectious eczematoid dermatitis. A third type consists of sharply defined red plaques with shiny, often weeping, surfaces.

Associated Considerations: Patients not infrequently have diarrhea. Candida albicans are recoverable on culture in most of these cases. In some, especially those with red, shiny plaques, fungous elements may be demonstrated in large numbers in fresh preparations. In two cases of perianal eczematous dermatitis seen by one of us, patch tests with the antibiotic were negative, but Reiches [32] states he has observed positive patch tests in such cases. The onset as a rule is rather early (48 to 72 hours). Intertriginous eruptions have been associated with the broad spectrum antibiotics.[32]

Mechanisms: The possibility of contact dermatitis due to the antibiotic cannot be excluded at this time. Intertriginous eruptions and those in and about the mouth suggest the possibility of but are not pathognomonic of vitamin B (especially riboflavin) deficiencies and various forms of moniliasis. Another mechanism may be ecologic imbalance.

ECOLOGIC RELATIONSHIPS

We believe the concept of ecologic imbalance to be an important mechanism in the development of many of the reactions seen after antibiotic therapy. Inasmuch as it is a relatively new factor for consideration in therapeutic reactions, we feel that a slightly more detailed discussion of this problem is warranted. We shall, however, focus this discussion primarily on the genesis of the oral and anogenital lesions previously alluded to.

Many and varied organisms are constantly present on the skin; others are present on mucous membranes and indirectly on the skin at mucocutaneous junctions. The existence, propagation, and pathogenicity of any one organism is the result of several forces, some emanating from other organisms and some from what might be termed the resistive powers of the host. Various factors may disturb the existing balance, with a resultant ascendancy of some organisms and the production of pathology.

We are of the opinion that many of the eruptions in and around the mouth and in the anogenital region associated with antibiotic therapy and possibly some cases of otitis externa are brought about by a disturbance of this balance. This is not an orginal idea. It has been speculated on, both affirmatively and negatively, in many publications.

Bacteriological examination has revealed an increase in the number of monilia in the gastrointestinal tracts of persons being treated with the broad spectrum antibiotics. Yow [17] and others have reported the development of Proteus and Pseudomonas infections during antibiotic therapy. To explain these observations, one or a combination of the following possibilities have been suggested.

Direct Stimulation of the Micro-Organism.—It is certainly a theoretical possibility that the antibiotic would provide some factor essential for the growth of Monilia and other organisms, but Kligman,[15a] Lipnik and co-workers,[15b] and Woods and associates [15d] have been unable to confirm this either clinically or experimentally, and, at present, the consensus is against this hypothesis. This concept of the stimulation of certain specific organisms while the same agent is inhibitory towards others is, of course, identical with Milian's theory of biotropism.

Suppression of Competitors.—A suppression of natural competitors, thereby allowing the organisms in question to flourish and multiply at an accelerated rate, may well be one explanation of the increase in number of ubiquitous organisms such as Monilia and Pseudomonas. We agree with Kligman [15a] and Lipnik and associates [15b] that one should be cautious of accepting the finding of increased numbers of Monilia in areas where they are normally found as proof that these organisms are the cause of any pathological lesion in such areas. Nevertheless, we feel that when they are found in lesions of types that have been accepted as being caused by these organisms, the finding would appear to be etiologically significant. If then monilial organisms are demonstrated, as they have been, in fresh preparations from perlèche lesions and from well-defined shiny red plaques in the anogenital region, a diagnosis of moniliasis is tenable. The same comments apply to intertriginous inframammary lesions. If the lesions made their first clinical appearance after the patient had received a broad spectrum antibiotic, it would appear that the only reasonable explanation is that the antibiotic favored excess proliferation of the organism in question to such a degree that it provoked a reaction on the part of the host, the reaction being, of course, the clinical lesion.

Although there are as yet no reports in the literature involving Pseudomonas or Proteus infection on the skin associated with antibiotic therapy, we have seen two cases of acute otitis externa following treatment with chlortetracycline in which Pseudomonas organisms were readily recovered. Neither of these patients had had otitis previously, nor had either had a seborrheic diathesis.

Modification of Host Resistance.—Many observers have noted the similarity of oral and anogenital lesions that develop after therapy with broad spectrum antibiotics to those associated with hypovitaminosis B, especially riboflavin deficiency. This has generally been attributed to the destruction of synthesizing organisms in the intestine. This idea has gained additional support from the fact that administration of vitamin B factors simultaneously with antibiotic appears to minimize the development of such lesions as well as the frequently accompanying diarrhea.

However, dissenters have pointed out that the lesions and symptoms usually appear much more promptly after institution of antibiotic therapy than is consistent with the development of a vitamin deficiency, and also that once they are established intensive vitamin therapy does not seem to help as long as the antibiotic is administered nor indeed for a while after cessation. These divergent points of view raise an interesting speculation, namely, that we may be dealing here with an enzymic interference mechanism leading to the development of a vitamin deficiency picture as suggested by Hughes [5] in some cases of metal poisoning.

Miscellaneous other possibilities that have been suggested include a change in pH as a result of alteration of gastrointestinal flora (Woods, Manning and Patterson [15d]). Another possibility is that there are inhibitions of phagocytic activity in the host tissue.[15b] Perianal contact dermatitis may develop following oral administration of an antibiotic followed by a monilial invasion in an area of decreased resistance.[32] There may be local irritant action of the antibiotics in the mouth and perianal areas (Lipnik and associates [15b]). We have not seen it mentioned, but it should appear obvious that attendant diarrhea could produce a perianal dermatitis due to the action of digestive enzymes, which might well be subsequently complicated by secondary invasion with various microorganisms.

Thus there are many interesting possibilities to explain the troublesome mouth and anogenital lesions seen after the administration of chlortetracycline, oxytetracycline, and chloramphenicol and rarely with penicillin by mouth. It would appear that no one explanation tells the entire story. Some combinations of them may finally be accepted as the proper interpretation.

SUMMARY

A theoretical discussion of mechanisms by which cutaneous reactions to drugs can be developed has been given. It has been emphasized that allergy comprises only one of the possible pathogeneses for the reactions. Eruptions that have been observed following systemic administration of antibiotics have been characterized clinically. Points considered important in their differentiation have been brought out. An attempt, admittedly imperfect, to correlate the clinical type with a pathogenetic mechanism has been made. It is felt that the determination of the type of eruption and the probable mechanism involved is necessary for a proper understanding, so that appropriate therapy and rational advice concerning the future management of the patient may be given. The great need for further study is apparent.

1853 W. Polk St. (Dr. Rostenberg).

TECHNIQUE OF REMOVAL OF ADENOID TISSUE OF THE NASOPHARYNX IN CHILDREN

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Adenoidectomy is generally considered to be a minor surgical procedure of little consequence. General practitioners, general surgeons, and pediatricians have felt, and still feel, perfectly competent to undertake this operation. The chief purpose of adenoidectomy is to alleviate nasal obstruction. And here it must be admitted that, when this is the only purpose, the operation even in the least skilled hands can be successful. The technique may be deplorable, yet the results may be amazingly good. For this paradox, nature is to be thanked. The natural process of recession accounts for the excellent results we see. But we see such results only in cases in which, to begin with, the complaint was nothing more than simple nasal obstruction. The record is not so good in patients presenting a more complicated problem, such as sinusitis or otitis, or in patients in whom regrowth and hypertrophy develop after removal of the original obstructing mass. Remnants of tissue left behind in the fossa of Rosenmüller or on the eustachean tube—and in "blind" adenoidectomy such remnants are almost invariably left by unskilled and even by skilled surgeons—such tags of tissue can and do undergo edema from infection, causing recurrent tubal closure, with subsequent secretory or suppurative otitis media and ultimate hearing loss. Regrowth may occur and reproduce the symptoms for which the operation was originally undertaken.

Challenged by these problem cases in which incomplete removal or regrowth was recognized as the stumbling block, otologists of inquiring mind began to think in terms of visualizing the surgical area. A great step forward in this direction was made when Yankauer introduced the tubular speculum. It permitted only limited visualization, however, and it remained for Lothrop in 1914 to provide a retractor that made it possible to visualize the nasopharynx and the structures in it. Together with the curet and the La Force adenotome, the palatal retractor made it possible for adenoidectomy to become a truly surgical procedure.

ANATOMY

The postnasal space, in its anteroposterior and transverse diameters, varies considerably in different persons. In children with high palatal arches, that part of the vault in relation to the superior portion of the posterior choanae may be very difficult to expose. The prominence of the bodies of the vertebrae vary, so that the lateral recess of the nasopharynx (fossa of Rosenmüller) behind the tori may be deep or shallow. The amount of

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From the Winthrop Foundation, Massachusetts Eye and Ear Infirmary.

Read before the Section on Laryngology, Otolaryngology and Rhinology at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

lymphoid tissue present on the tori of the eustachean tube is amazing. The tori may be so flat that they make only a negligible prominence on the lateral wall, or they may be so prominent and so covered with lymphoid tissue or edematous membrane that, when the palate is lifted, they appear almost to touch each other, obstructing the posterior choanae. These anatomic details and variations cannot be appreciated and taken fully into account unless the palate is elevated and the area actually inspected.

ANESTHESIA

In performing adenoidectomy with the patient in the sitting position, anesthesia is as important as the surgical technique itself. When an intratracheal tube is used, there is little to worry about; the hypopharynx is packed, and there is no danger of bleeding into the trachea. When the anesthesia is administered through a mouth hook, however, the responsibility for maintaining a clear airway is primarily the surgeon's. Sitting in front of the patient, he is the one who will see as well as hear what is happening should blood enter the trachea. When a mouth hook is used, anesthesia should be just deep enough to oblate the pharyngeal reflexes sufficiently to permit good instrumentation, yet not so deep that the patient cannot induce coughing or even vomiting within a matter of minutes at the operation's end. When the pharyngeal reflexes are not sufficiently quieted, gagging will contract the pharyngeal muscles, rolling the mucosa, and give an entirely false picture of the field. Active pharyngeal reflexes, moreover, do not permit the delicate control of the punches so necessary for trimming the lymphoid tissue from the tubes and the fossa of Rosenmüller as well as from the lateral bands and pharyngeal wall. The final precaution of inducing coughing and vomiting before the patient leaves the operating table has saved me much anxiety; it permits me to inspect the area and control any bleeding that might be provoked by gagging and other postoperative activity. I have no use for "quick" anesthetics. They do not permit adequate inspection of the surgical field so necessary for the control of bleeding.

TECHNIQUE

With the patient in the upright position, the surgeon sits facing him, so that his hands, if he is to carry out both tonsillectomy and adenoidectomy, are at a level permitting easy natural motions. I remove both tonsils before going on to the adenoid tissue, one tonsil at a time, controlling bleeding completely before removing the second tonsil. Some prefer to remove the adenoids first, pack the postnasal space, and then take out the tonsils, returning later to remove any remaining adenoid tags. I do not believe the order of procedure matters. If a hydraulic chair is used, the patient may be raised for adenoidectomy to a level where the surgeon can comfortably see into the postnasal space when the patient's head is extended. Slight rotation of the patient's head by the head holder will give the surgeon a free, full range of vision into the vault without forcing him into bodily contortions.

When anesthesia is administered intratracheally, the danger of blood getting into the trachea can be effectively minimized by shutting off the hypopharynx with a uterine-type, saline-moistened pack once the tube is in place. When a mouth hook is used and no protection to larynx and trachea provided, the surgeon must be constantly on the watch for any evidence of blood entering the trachea or larynx. An assistant should be on hand to sweep a curved suction tube constantly across the hypopharynx, leaving the surgeon's hands free for his work. A Jennings or similar type of mouth gag that does not have a self-retaining tongue depressor should be used. If the palate is to be elevated to the maximum degree, there should be no counterpull against the retractor by pressure on the tongue; counterforce defeats the whole purpose of elevating the palate. If the tongue is in the way, as it is likely to be, the assistant will soon learn to hold the tongue down gently with the suction tip, at the same time clearing the hypopharynx of blood and secretions.

Only experience will perfect one in the art of elevating the palate properly. To expose the torus, the retractor is placed laterally on the palate just above the tonsillar fossa and the wrist flexed. Slipping the lip of the retractor behind the torus and again flexing the wrist will beautifully expose the fossa of Rosenmüller. To visualize the postnasal space in some cases requires extreme pressure on the palate. The ease with which the entire postnasal space can usually be exposed to view makes it inexcusable for the otolaryngologist to carry out adenoidectomy in any but the careful and thorough manner possible only under direct visual control. Once the palate is elevated and the main mass of adenoid tissue inspected, it can be removed by several insertions of a sharp-bladed La Force adenotome of suitable size. A sharp adenoid curet, a good instrument under direct vision and in careful hands, can be used although I myself do not.

Next, one inspects the eustachean tube, the lateral bands (salpingopharyngeal folds), and the fossa of Rosenmüller. The surgeon who has never performed any but "blind" adenoidectomies has a surprise in store for him. A direct view of the anatomy of this region will make it at once clear to him why neither curet nor La Force adenotome alone can remove lymphoid tissue from this area. He will find that the fossa of Rosenmüller varies widely in depth and in width. Sometimes the fossa is so deep that one cannot see the cutting edges of the instrument, no matter what retractor one uses. One learns to tell by the feel of the instrument when the recess has been cleaned of lymphoid tissue. In this area I use a no. 1 ring punch, with a gentle, curved, sweeping motion of the instrument, opening and closing it repeatedly along the superior margin of the posterior nares as it blends with the upper portion of the fossa of Rosenmüller. In the relatively few cases in which the surgeon cannot see the head of his cutting instrument, he may have to palpate this particular area for small tags. I want to say here that I utterly condemn as unsurgical the maceration of adenoid tabs by friction with a gauze-wrapped finger. I approve use of the finger only to palpate the vault, particularly when the arch is so high that its uppermost portions cannot be seen even under direct inspection. To remove the lateral bands lying along the posterior pillar of the tonsil extending upward to the tube, one gently rolls the pillar laterally. The hypertrophied band of lymphoid tissue is then trimmed to the desired depth. I disapprove of sharp dissection or stripping of this tissue. Lymphoid nodules on the pharyngeal wall are removed with the small oval punch, cutting with the pharyngeal surface. Deep bites may produce unnecessary scarring.

Even under direct visual control, islands of lymphoid tissue will remain in the mucosa that may subsequently hypertrophy, for any of several reasons. Reinspection of patients in the course of a study made of postoperative adenoidectomies done under the best conditions has taught me that adenoid regrowth cannot always be prevented. I can state, however, that massive regrowth so common following blind adenoidectomy is very rare following direct adenoidectomy.

REMOVAL OF RECURRENT GROWTHS

The removal of recurrent adenoid growth makes greater demands on the surgeon's skill than a first operation. Owing to scarring, the tissues may be so firmly adherent to the pharyngeal wall that neither adenotome nor curet can remove them. Even after four or five sweeps into the vault, the adenotome basket may remain empty. This mass of tissue can be removed only by sharp punches. The curet is likely to strip the vault of its membrane and should not be used. Because of the bleeding, second removal is a time-consuming procedure that calls for great care and patience. If I find a large amount of irregular regrowth throughout the postnasal space, I always use an intratracheal tube with a hypopharyngeal pack to prevent blood entering the trachea, an extremely important precaution. If only a small amount of lymphoid tissue is present and one knows beforehand that relatively little work will have to be done, a mouth hook with a sweep-suction is adequate.

CONTROL OF BLEEDING

When the adenoid mass is being removed by the La Force technique, a sponge of the proper size, held with a sponge forceps, is placed in the hypopharynx. As the instrument is removed, the sponge is quickly swept into the postnasal space and firmly held there to control bleeding. When it becomes saturated, it is withdrawn and a fresh sponge slipped at once into place. When the bleeding subsides sufficiently, the La Force adenotome is reinserted for removal of the lateral portions of the mass. The palate is again elevated to bring into view the bleeding surface of the nasopharynx. Vessels are clamped with curved hemostats similar to those used in gallbladder surgery; these have a broad surface that take in considerable quantities of tissue. A few minutes' clamping will suffice; if not, it is maintained until all bleeding has stopped.

With bleeding controlled, the remnants of lymphoid tissue remaining in the fossa of Rosenmüller, on the tori, and on the pharyngeal wall can be removed. As a final precaution, I paint the entire surface of the postnasal space with Garland's solution (tincture guaiac, 25 cc.; tincture iodine, 25 cc.; and tincture benzoin compound, 200 cc.) using a long, cotton-wound applicator. This solution has a good astringent effect, slightly discoloring the tissues so that any capillary ooze can be spotted at once and controlled.

COMMENT

I have described a technique that has given me great satisfaction, particularly when used for children in whom tubal closure with hearing loss was a recurring problem. Regardless of the specific purposes for which this technique can be applied, it is high time for otolaryngologists to show the correct way to perform an adenoidectomy, thereby saving countless numbers of children the miseries of recurrence.

20 Charlesgate West.

MODERN SURGICAL MANAGEMENT OF MEDIASTINAL TUMORS AND INFECTIONS

Arthur S. W. Touroff, M.D.
and
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Twenty years ago, thoracic surgery was accompanied by such significant morbidity and mortality that many physicians were unwilling to have their patients subjected to operation except under the most desperate circumstances. Since then, however, great advances in technical methods, refinements in anesthesia, the more widespread administration of blood to combat shock, and the use of antibiotics to prevent and control infection have led most physicians to adopt a more progressive attitude. Nevertheless, there are still those of our colleagues who hesitate to advise surgical treatment because of vivid memories of the poor results of thoracic surgery as practiced two and three decades ago. Our remarks concerning the surgical treatment of mediastinal tumors and infections are addressed primarily to the latter physicians, in the hope that an awareness of the excellent results of modern surgical methods will cause them to abandon their previously held conservative attitudes.

One of the present-day deterrents to operation, aside from a misconception of the dangers involved, seems to be the fear of permanent anatomic deformity and respiratory "crippling." Often the thoracic surgeon, in his desire to obtain adequate exposure of the lesion at the operating table, makes an unnecessarily large incision and accompanies it by the removal of long segments of one or more ribs. The making of such incisions frequently results in significant loss of blood, especially if it is necessary to divide the dorsal musculature of the upper portion of the trunk. Secondly, the use of large incisions prolongs the operative procedure if all divided anatomic structures are carefully reapproximated during the closure of the wound. In the third place, the freely divided heavy muscles of the shoulder girdle frequently require considerable time to heal solidly, thereby delaying the

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From the Surgical Service of Arthur S. W. Touroff, M.D., Mt. Sinai Hospital.

Read in the Symposium on Modern Trends in Chest Surgery before the Section on Diseases of the Chest at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

patient's return to work, especially if his occupation requires a significant degree of vigorous arm or shoulder motion. Fourthly, large incisions leave more prominent scars, which are particularly distressing to women. Next, the removal of long rib segments often results in significant "depression deformities" of the thoracic cage. In addition, in growing children, extensive rib resection not infrequently is followed by the gradual development of scoliosis or kyphoscoliosis. In some instances, such deformities may be extreme. Finally, the use of long incisions accompanied by liberal rib excision, especially if the wound is located posteriorly, often is accompanied by considerable postoperative discomfort.

During World War II, one of us (A. S. W. T.), a consultant in thoracic surgery in the European Theater of Operations, had the responsibility of returning wounded military personnel to duty as rapidly as possible, especially during certain periods when the shortage of fighting men was critical. He attempted to accomplish his purpose by making surgical incisions as small as possible commensurate with adequate exposure of the intrathoracic lesion. Such approaches, coupled with rib division and replacement at the conclusion of operation, and the use of selectively placed incisions, resulted in appreciably lessened anatomic deformity and "thoracic crippling," more rapid convalescence, and an earlier return to full military duty. After the war, the above principles were applied to civilian thoracic surgical practice with gratifying results.

MEDIASTINAL TUMORS

One of the reasons for the conservative attitude held by some physicians concerning surgical extirpation of mediastinal tumors appears to be the belief that, inasmuch as many such tumors are benign, a policy of "watchful waiting" can do no harm. Unfortunately, this frequently is not the case. In the first place, a certain proportion of benign lesions undergo malignant degeneration, especially in the case of teratoid and thymic tumors. (There is nothing more tragic than to observe such initially small anterior mediastinal tumors gradually increase in size and to find at operation that they have infiltrated the surrounding structures.) Secondly, benign tumors that are permitted to become excessively large may give rise to such severe respiratory distress or right heart failure that death occurs, or operation becomes dangerous. In the third place, a benign tumor may enlarge in such a manner as to surround, or insinuate itself between, the major vessels of the thorax, thereby rendering removal of the mass difficult or impossible. Finally, some longstanding congenital posterior mediastinal tumors, in addition to resulting in the above complications, are associated with marked kyphoscoliosis. For all of the foregoing reasons, and also because treatment of benign tumors in their early stages yields a very high incidence of cure, prompt surgical attention to such lesions is indicated.

Radiotherapy.—At this juncture, a brief discussion of the role of radiotherapy in the treatment of mediastinal tumors may be of value. Some physicians, in their desire to have patients avoid surgery, routinely recommend radiation. Only if the latter proves ineffectual do they refer patients for operation. While at times such a course of action does nothing more than delay surgical therapy, on other occasions it has more serious consequences. Undue delay incurred by prolonged ineffectual radiotherapy may permit a benign tumor to undergo malignant degeneration or may result in enlargement of a benign tumor to such a degree as to render its subsequent removal more difficult or hazardous. The mediastinal tumors that respond to radiation therapy are chiefly those of lymphatic origin such as Hodgkin's disease and lymphosarcoma. Such lesions usually are located in the anterior and middle mediastinum, frequently extend into both sides of the chest, and have fairly characteristic lobulated contours, often with ill-defined borders. When there is strong evidence that the tumor in question is not of lymphatic origin, radiotherapy should be avoided for reasons already mentioned; however, should there be some suspicion that one is dealing with a lymphogenous mass, the use of radiation therapy is permissible with certain provisos. It is generally agreed that, if a tumor is of lymphatic origin, the response to adequate radiation is fairly prompt. Thus a so-called trial of radiation usually consists of the administration of a total of 2,000 to 3,000 r in air (equivalent to approximately 1,000 to 1,500 r delivered to the tumor). Treatment, consisting of the administration of about 300 r in air every other day, should be continued for two to three weeks. If the tumor is radiosensitive, there will be clear evidence of shrinkage within a period of another two to three weeks. Thus, an adequate trial of radiation should not consume more than four to six weeks. If the tumor fails to demonstrate evidence of shrinkage within that period, further radiation should be abandoned and the patient subjected to operation without further delay. Incidentally, tumors that respond to radiotherapy usually are held in check only temporarily and eventually prove fatal.

Principles of Surgical Treatment.—The first requisite of surgical treatment of mediastinal tumors, along the lines already outlined, consists of localizing the intrathoracic mass precisely. This is accomplished by taking first a roentgenogram in the conventional posteroanterior position. The next step is to take a lateral view with the cassette placed against the hemithorax containing the lesion, i. e., right or left lateral position. Should the lateral film reveal the intrathoracic lesion to be located in the posterior half of the hemithorax, a third film (anteroposterior) will reveal the details of the mass more clearly than the original posteroanterior film. Films should always be made with the patient in the upright position. The relationship of the intrathoracic lesion to the adjacent rib cage and to the midline of the thorax should be noted carefully, for the information thus obtained serves as a guide to the placement of the operative incision.

It is our custom to place the incision in such a position as to give the most direct approach to the tumor, and we are unalterably opposed to the routine use of the posterolateral incision employed by some surgeons regardless of the location of the tumor. Thus, we employ anterior incisions for lesions situated primarily in the anterior half of the chest and posterior incisions for tumors situated in the posterior half. We approach lesions situated essentially in the middle mediastinum through a posterior incision. The use of incisions placed as close as possible to the tumor permits the incision to be relatively small. In general, the smaller the incision, the less the postoperative pleural reaction and outpouring of fluid into the pleural space from the incision in the thoracic parietes. Small incisions result in relatively small scars, a fact that is appreciated particularly by women. In making an anterior approach in female patients, we usually employ a submammary incision placed in the crease between the under surface of the breast and the adjacent chest wall. This usually overlies the fourth intercostal space or fifth rib and is ideal for anteriorly situated tumors that are located near the diaphragm. In lesions located anteriorly at a higher level, the breast is mobilized in an upward direction and the pleural cavity entered in the intercostal space that lies over the center of the tumor mass.

Once the pleural cavity is entered through the relatively small anterior intercostal incision, the tumor is palpated with the examining finger. The next step is to divide the costal cartilage either above or below the intercostal space in question. The freed rib then is retracted and as much of the tumor visualized as possible. If necessary, an additional costal cartilage, either above or below, is divided. When an unusually large tumor is present, another costal cartilage may have to be divided. The usual submammary incision begins at the lateral border of the sternum and commonly extends to the lateral border of the pectoral muscles. Thus far, we have been able to remove even the largest anterior mediastinal tumors through an intercostal incision that is combined with division of not more than three costal cartilages. Should the initial incision prove inadequate for removal of a tumor, the former can be enlarged readily. We do not hesitate to enlarge an incision when necessary, but thus far we have had no occasion to extend any anterior approach beyond the line of the mid-axilla. In males, the incision is placed directly over the mass, avoiding only the nipple in the latter area. The actual technique of removing the tumor does not differ from that commonly employed. We appreciate that our type of exposure is not so wide as that afforded by a liberal incision accompanied by the removal of one or more ribs. However, although we may be at some slight disadvantage in regard to surgical exposure, we have found the exposure afforded by the incision described to be adequate in most instances. After the tumor has been removed, each divided costal cartilage is carefully reunited with a single heavy silk suture. The thoracic wall then is accurately closed in layers.

When the tumor is located in the middle or posterior mediastinum, our incision is placed posteriorly over the intercostal space that lies closest to the center of the lesion. The skin incision begins at a point immediately lateral to the transverse process of the vertebra and extends laterally for a distance that depends on the size of the tumor. When a small paravertebral mass is present, the skin incision usually does not exceed 5 in. (12.5 cm.) in length. The pleural cavity is entered through the underlying intercostal space and explored with the finger, as described previously. The rib immediately above or below is divided at a point just lateral to the transverse process. It then is retracted as much as possible in order to permit visualization of the tumor. Additional ribs, either above or below, are similarly divided if necessary. Should the skin incision prove too short to permit adequate retraction of the divided ribs, it is lengthened as required. In the case of unusually large tumors, the incision may extend from the paravertebral region to the posterior axillary line or mid-axilla. After the tumor has been removed, small drill holes are made in the divided ends of the rib or ribs. The ends then are carefully apposed and fixed with stainless steel wire or heavy silk that is passed through the drill holes. Thus, at the completion of the intrathoracic portion of the operation, the integrity of the thoracic cage is restored. We have not encountered a single instance of postoperative scoliosis since employing this technique and believe that the accurate reposition of all divided ribs is an important factor in preventing such deformity.

During the 10 year period in which we have employed the small, selectively placed incisions described, we have noted a significant reduction in postoperative discomfort and a shortening of the convalescent period of our patients. Postoperative pleural effusions have been less extensive than noted previously. Reduction of pain following operation has been especially notable in cases in which the anterior approach was employed. This is explained readily by the fact that the patient is not forced to lie on the wound as is the case when posterior incisions are employed. In females, the healed submammary wound often is barely visible. In cases in which an anterior mediastinal tumor extends well into both pleural cavities, we usually perform the operation in two stages, removing as much of the tumor as possible through one pleural cavity and removing the remainder through the opposite pleura at a later date. In no instance have we found it necessary to split or resect the sternum. Furthermore, we have never observed the unfavorable clinical features of paradoxical respiration that often are seen following incisions that include removal of long segments of underlying ribs.

MEDIASTINAL INFECTIONS

Mediastinal infections may be derived from (1) extension of pleural suppuration, usually secondary to infection of the lung; (2) downward extension of severe parapharyngeal infection, especially in children; (3) osteomyelitis of the vertebrae; and (4) perforation of the esophagus. The first three of the above sources of mediastinal infection have become of decreasing importance, for all types of severe infection are becoming less and less common as the result of widespread use of the many antibiotics presently available. Thus, perforation of the esophagus remains as the commonest potential source of infection of the mediastinum. Esophageal perforation may be due to swallowed foreign bodies or may result from trauma during endoscopy. The vast majority of perforations of the esophagus, whether instrumental or by foreign body, involve the cervical portion of the organ, usually in the area immediately below the level of the cricopharyngeus. Infection of the retroesophageal tissues then may extend downward into the posterior mediastinum. Perforation of the thoracic esophagus resulting in mediastinitis most commonly is the result of instrumentation.

Cervicomediastinal Infection. — Cervicomediastinal infections fall into two major groups. In the first group, the infection results from free perforation of the esophagus by an ingested foreign body, most commonly a meat or chicken bone, or by a rigid instrument such as an esophagoscope or gastroscope. Large perforations of the cervical esophagus in the region below the cricopharyngeus usually are accompanied by escape of air and gas from the hypopharynx into the surrounding soft tissues. The resulting infection is most frequently of an anaerobic type, and downward spread of infection into the posterior mediastinum, via the retroesophageal space, is an ever-present danger. As the patient makes swallowing movements, more and more air is apt to be forced into the surrounding soft tissue planes of the neck, giving rise to the crepitation that is so characteristic of the condition. In certain cases, the amount of air that escapes from the esophageal opening increases so rapidly that the tissues of the neck, face, and upper chest quickly become distended and crepitant. Roentgenograms of the neck and chest, made with the patient in the conventional anteroposterior and lateral positions, disclose the presence of air in the superficial soft tissues of the neck and upper chest, cervical retroesophageal space, and mediastinum. The characteristic film of the chest reveals air in the mediastinum. The latter is best seen in the anteroposterior film. Without going into details of pathology and symptomatology, it can be said that the presence of increasing amounts of air under pressure in the upper mediastinum opens up pathways that facilitate the downward extension of infection.

In those instances in which emphysema of the neck and upper chest is increasing rapidly, operation should be performed without delay in order to forestall the development of serious descending anaerobic infection of the posterior mediastinum. The operative procedure is performed with the patient under local anesthesia and is well tolerated. It consists of making an incision parallel to the anterior border of the sternomastoid muscle, extending from the suprasternal notch to a point shortly below the mastoid process on the side of the neck that presents the maximum tenderness and swelling. The sternomastoid muscle and great vessels are retracted laterally and the presenting lobe of the thyroid mobilized and retracted medially, thereby exposing the cervical portion of the esophagus and hypopharynx. Inspection of these structures usually discloses the perforation; and, frequently, if the perforation is due to a foreign body, the latter can be readily seen and removed. Often, a localized abscess containing foul-smelling pus is encountered. If the site of perforation cannot be determined because of the presence of necrotic tissue and debris, the patient is instructed to swallow a small mouthful of water stained with methylene blue. As the fluid is swallowed, it issues from the esophageal perforation almost at once. After any abscess that may be present is evacuated, the edges of the esophageal perforation are loosely approximated with a few absorbable surgical sutures. A small packing soaked in penicillin solution then is placed in the retroesophageal space and packed downward for a short distance in order to wall off the lower mediastinum and prevent downward seepage of infected material. A second penicillin-soaked packing is placed in the abscess cavity against the sutured esophageal perforation. Both packings are brought out through the lower angle of the wound. The wound itself is closed loosely with a single layer of sutures that unite only the edges of the skin and subcutaneous tissues. A long nasal catheter or Levin tube is passed into the stomach or lower esophagus before the wound is closed, in order to make sure that the tube extends beyond the site of perforation. It is left in situ.

Postoperative care consists of administering penicillin in adequate dosage and feeding the patient through the nasal tube only. Immediate ambulation is encouraged. The postoperative care of the wound consists of gradually shortening the packing that lies against the perforation and removing it at the end of approximately one week. In the meantime, the lower packing that protects the mediastinum is not disturbed. By the time the upper packing is removed, the mediastinum is well sealed off, and the lower packing then may gradually be removed by shortening it daily for the next three or four days. The patient is fed through the indwelling nasal tube for approximately 10 days, after which the tube is removed and the patient placed on a high-caloric fluid diet. Should slight leakage of esophageal contents continue after the packings have been removed from the wound, healing is facilitated by reintroducing the nasal tube and continuing tube feedings for another week or so. It is to be emphasized that even though a skillful endoscopist may remove a large foreign body that has perforated the wall of the cervical esophagus, the infection present outside the esophagus is potentially of a most serious nature. Reliance on antibiotics to control such infections when more and more air is being forced into the periesophageal tissues is hazardous and is mentioned only to be condemned. The surgical procedure described controls such infections promptly and offers the maximum protection against downward extension of the infective process into the lower posterior mediastinum.

The second major type of cervicomediastinal infection results from small perforations of the organ by ingested foreign bodies or instrumentation. In such cases subcutaneous emphysema, due to the escape of air from the hypopharynx or esophagus, does not occur or is minimal. In contrast to the marked inflammatory edema of the esophageal mucosa that often prevents the endoscopist from visualizing and extracting large foreign bodies that have lodged in the wall of the esophagus, the inflammatory reaction here is considerably less, and the foreign body often can be extracted. If infection is due to a small instrumental perforation, the latter seldom can be detected on subsequent esophagoscopy. In the absence of the continuous forcing of air into the tissues that invites spread of infection beyond the confines of the esophagus, conservative treatment may be pursued with reasonable chance of success. However, should fever persist and swallowing become more difficult and local tenderness more marked, the surgical treatment already described is recommended.

Posterior Mediastinitis.—The use of antibiotics has practically eradicated the danger of suppurative posterior mediastinitis resulting from intrathoracic suppurative disease. As a result, infections of the lower mediastinum are rare; however, such infections occasionally are encountered as the result of slow erosion of an esophageal neoplasm or sudden instrumental perforation. Under the former circumstances the infective process is apt to take the form of a localized abscess that is most effectively treated by posterior extrapleural mediastinotomy. Careful localization, by means of anteroposterior and lateral roentgenograms, gives the clue to the precise level of the mediastinal abscess in relationship to the posterior ends of the ribs. The operative procedure consists of making a small, accurately placed, paravertebral incision over the abscess. The appropriate transverse process and a short segment of the adjacent rib are removed. Next, the underlying pleura is carefully stripped away in a direction toward the vertebral column. In this manner, the posterior mediastinum is entered and the abscess exposed and evacuated. Drainage is provided by lightly packing the abscess cavity and superficial wound with gauze soaked in penicillin.

When the lower esophagus is inadvertently perforated by the endoscopist, the instrument often enters the pleural cavity. The reason for this is that the thoracic portion of the esophagus lies superficially within the posterior mediastinum and is covered only by the mediastinal pleura. Thus, an instrument that traverses the esophageal wall often pierces the overlying thin layer of pleura. The result usually is the production of a pneumothorax that develops rapidly and not infrequently is of the "tense" variety. Pleural effusion of varying degree almost always follows. Such a situation calls for prompt action because of the danger of anaerobic infection of the pleura from organisms within the esophagus. Before the advent of antibiotics, instrumental perforation of the lower esophagus frequently ended fatally for the patient.

Modern therapy consists of prompt institution of closed drainage of the chest to overcome the effects of the pneumothorax and to remove any fluid that may have accumulated. Massive doses of penicillin should be administered. Leakage from the esophagus into the involved pleura may be minimized by passing a Levin tube into the stomach and leaving it in place for purposes of feeding. Suction applied to the drainage tube hastens reexpansion of the lung. Frequently the prompt institution of the therapy outlined above prevents the pleural fluid from becoming infected. If the esophageal perforation is small, it often heals spontaneously, and the patient recovers promptly. On the other hand, if surgical treatment is delayed, frank empyema often develops. In the presence of the latter condition, spontaneous healing of the esophageal perforation occurs rarely. If empyema and persistent esophageal leakage are present, treatment consists of thoracotomy, drainage of the pleural infection, and loose suturing of the rent in the esophagus. In our opinion, the best type of drainage in such cases is afforded by packing the empyema cavity. This not only results in prompt "cleaning up" of the empyema but also accelerates healing of the esophageal tear.

The best results of treatment of any type of perforation of the esophagus, regardless of the location of the lesion, will be obtained only if therapy is applied promptly. In our personal experience, employing the principles of surgical therapy outlined, we have not had any mortality thus far and recovery has been uninterrupted in each instance.

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EVALUATION OF ENDOCRINE THERAPY FOR ADVANCED BREAST CANCER

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Certain alterations in endocrine balance have been shown to constitute effective palliative therapy for some patients with breast cancer. Surgical castration, adrenalectomy, administration of estrogens, and administration of androgens have been demonstrated to produce objective remissions in some patients, whereas in other patients the treatment is without effect or may actually accelerate the growth of the neoplasm. Weeks or months of clinical observation are usually required following a given therapeutic procedure to determine whether the desired effect is being obtained.

An objective index of alterations in tumor growth in man would provide an invaluable guide to the selection of the proper therapy for the individual patient with breast carcinoma. Such an objective measurement is afforded by determining the rate of bone destruction in patients with osseous metastases that are predominantly osteolytic in type. Since bones are a favorite site for metastases from breast carcinoma, calcium excretion studies provide a practical, sensitive method for evaluating alterations in the rate of tumor growth in many of these patients.

CALCIUM EXCRETION AS A MEASURE OF OSTEOLYTIC TUMOR GROWTH

The use of calcium excretion data as a measure of bone destruction due to tumor growth has been previously described by us[1] and others.[2] The theoretical considerations for this procedure are presented in table 1. A normal person on a low calcium diet (200 mg. of calcium per day) excretes 50 mg. of calcium per day in the urine and 200 mg. in the feces and is in 50 mg. of negative calcium balance. If it is assumed that the growth of 1 gm. of tumor tissue destroys 1 gm. of bone, then 100 mg. of calcium should be excreted, since this is the approximate calcium content of 1 gm. of bone.

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Nearly all of this calcium would be excreted in the urine, and a negative calcium balance of 150 mg. would result. This difference in calcium balance or in urinary calcium excretion between a normal person and a patient with osteolytic tumor is readily measurable. The destruction of 1 gm. of bone per day probably represents the minimum rate of osteolysis that can be measured by this technique.

Precise measurements of calcium balance in patients is a complicated procedure and is practical only for investigational studies. In many patients with osteolytic disease, however, hypercalcuria is of such a magnitude that it can readily be detected with the use of the Sulkowitch solution (containing 5 gm. of oxalic acid, 5 gm. of ammonium oxalate, and 10 gm. of glacial acetic acid in enough distilled water to make 300 cc.).[3] Gross changes in calcium excretion following therapy can be determined easily by the use of this simple test. The patients should be kept on a relatively low calcium intake when urine is collected for calcium estimations by omission of milk and milk products from the diet. Hypercalcemia is indicative of a high rate of osteolysis. Hypercalcemia does not appear until the urinary calcium excretion exceeds 500 mg. per day when renal function is unimpaired. When hypercalcemia is present prior to therapy, serial determinations of serum calcium provide an additional index of the effects of the therapy.

TABLE 1.—*Theoretical Calcium Balance in Osteolytic Bone Disease*

Normal Calcium Excretion	
Calcium intake	+200 mg.
Calcium excretion (50 mg. urinary and 200 mg. in feces)	—250 mg.
Calcium balance	— 50 mg.
Calcium Excretion with Osteolytic Tumor	
Calcium intake	+200 mg.
Calcium excretion (150 mg. urinary and 200 mg. in feces)	—350 mg.
Calcium balance	—150 mg.

Other causes of hypercalcuria and hypercalcemia must be ruled out before these determinations can be used as an index neoplastic bone destruction. Hyperparathyroidism and osteoporosis can usually be readily differentiated by the clinical picture, the laboratory data, and skeletal radiographs. Calcium excretion studies are of no value in following the course of the disease in patients without bone metastases.

ROLE OF OVARIAN FUNCTION IN MAMMARY CARCINOMA GROWTH

Utilizing calcium excretion data as outlined above, the rate of osteolysis has been studied in six premenopausal women with osseous breast metastases during a menstrual cycle, after surgical oophorectomy, and during administration of ovarian hormones.[4] All of the patients were maintained on a low calcium intake (200 mg. of calcium per day) throughout the studies. All six patients had significant hypercalcuria at the beginning of the studies, and one patient had hypercalcemia.

The results of these studies in one of the patients are presented in detail in figure 1. Urinary calcium excretion was markedly elevated at the outset and continued to rise steadily with the progress of the menstrual cycle. At the onset of menstruation, there was a prompt decline in urinary calcium but not to a normal level. During the next cycle, which was an ovulatory, urinary calcium excretion again increased to a maximum of 800 mg. per day and hypercalcemia developed. Then, the urinary calcium level declined again, and hypercalcemia disappeared spontaneously without the occurrence of menstruation.

Following oophorectomy, urinary calcium excretion decreased to normal levels within the first week, indicating prompt cessation of osteolysis. Clinical improvement was not as rapid as the fall in urinary calcium. Bone pain gradually subsided over a two week period following castration.

Administration of progesterone for a two week period produced no effects on symptomatology or on calcium excretion. Administration of 0.15 mg. of ethinyl estradiol daily by mouth brought about a prompt return of bone pain and of hypercalcuria and hypercalcemia. Withdrawal of the estrogen resulted in prompt subsidence of hypercalcuria and hypercalcemia and a gradual subsidence of bone pain. This patient obtained a subjective and objective remission after castration that lasted for five months followed by relapse.

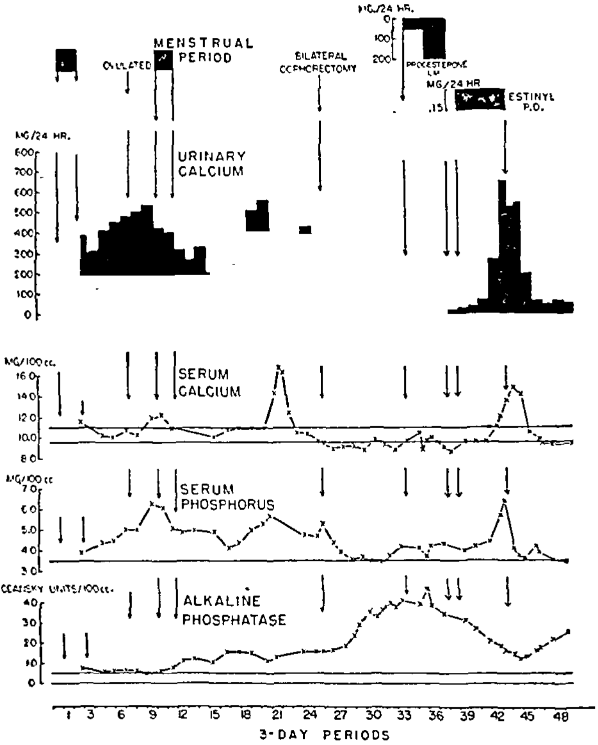

Fig. 1.—Changes in urinary calcium, serum calcium, serum phosphorus, and serum alkaline phosphatase in a patient with osteolytic metastases.

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Two other patients have responded in the same manner as the patient just described. Urinary calcium excretion rose during the menstrual cycle and fell at the onset of menstruation. Oophorectomy was followed by a prompt decline in urinary calcium excretion to normal levels and by symptomatic improvement. Administration of estrogen produced a return of hypercalcuria, and withdrawal of the estrogen was followed by prompt disappearance of hypercalcuria. Both of these patients have obtained objective remissions following surgical castration, and they were still in remission at the time of writing, four and eight months after oophorectomy.

The other three women responded in an entirely different manner than the three patients described above. The results obtained in one of the patients in this second group are detailed in figure 2. It can be seen that there was no fluctuation in urinary calcium excretion during the menstrual cycle or at menstruation. Surgical castration failed to influence the level of calcium excretion. Administration of estrogen produced a suppression of calcium excretion but not to normal levels, and, when estrogen was withdrawn, urinary calcium excretion increased and hypercalcemia appeared. There was no clinical improvement following oophorectomy, and skeletal radiographs showed progression of the osseous metastases. The other two patients in this group responded in a similar manner as the patient just described; neither of these patients obtained any benefit from surgical castration.

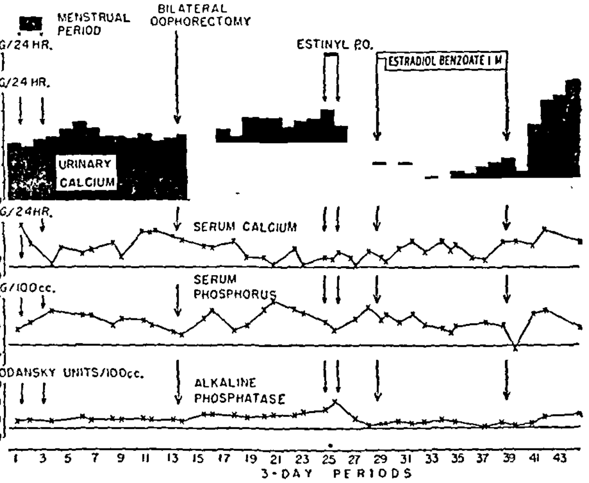

Fig. 2.—Changes in urinary calcium, serum calcium, serum phosphorus, and serum alkaline phosphatase in a patient with osteolytic metastases.

The pathological diagnosis of the primary tumor in all six patients was infiltrating duct carcinoma, grade 2 or 3. The histological appearance of these six tumors has been carefully reviewed, and there appear to be no distinguishing features that would divide these cases into two groups. There also appear to be no distinguishing clinical features between the patients who responded to surgical castration and those who failed to respond.

The following conclusions appear to be warranted from these observations: 1. There are two types of mammary cancer in women: One type is dependent upon estrogen for maintenance of its growth rate; the other type is nonestrogen dependent. 2. These two types of mammary cancer cannot be distinguished by their histological appearance or from the clinical features of the disease. 3. Calcium excretion studies are a practical guide for determining promptly the response to therapy in patients who have osteolytic metastases. 4. These observations provide a physiological concept for the medical treatment of advanced breast cancer in women. In the estrogen-dependent type of mammary cancer, treatment should be directed to removal of the sources of estrogen in the body. Surgical oophorectomy removes a major source of estrogen and induces temporary objective improvement in patients with this type of breast cancer. The nonestrogen-dependent type of mammary cancer should not be benefited by removal of estrogens. Surgical castration fails to alter the course of this type of breast cancer.

ROLE OF ADRENALECTOMY IN ADVANCED MAMMARY CARCINOMA

Huggins and co-workers [5] and some of us [6] have conclusively demonstrated that bilateral adrenalectomy will induce significant objective remissions in some patients with advanced breast carcinoma. In our Memorial Center series, 7 out of 20 patients with advanced breast cancer have had significant, objective remissions following bilateral adrenalectomy. Huggins has reported about the same incidence of remissions (40%) in his cases of breast cancer. In some patients, adrenalectomy fails to alter the progressive growth of the cancer.

Since it appears that less than 50% of women with breast cancer will respond favorably to adrenalectomy, a method of predicting the cases that will respond favorably would be of great value. Huggins and Dao [5] have reported that the microscopic appearance of the primary breast carcinoma is indicative of the response to be anticipated from adrenalectomy. The better differentiated adenocarcinomas and papillary carcinomas showed a high incidence of response to adrenalectomy, while the more anaplastic lesions in general did not respond. We have reviewed the microscopic findings in our cases with Drs. Fred Stewart and Frank Foote. All of the tumors were originally diagnosed as infiltrating duct carcinoma, grade 2 or 3. In the attempt to classify the tumors as differentiated versus anaplastic, difficulty was often encountered because of a spectrum of structural variations in a single lesion. With the examination of a few microscopic sections of a primary lesion, one is left in some doubt as to the predominant type of tumor in the original lesion without consideration of the metastases. In spite of these difficulties, the lesions were classified according to the degree of differentiation and correlated with response to adrenalectomy. In 16 cases so correlated, there was 75% agreement between microscopic appearance and response to adrenalectomy. This degree of apparent correlation is of interest, but because of the small number of cases may be entirely fortuitous.

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[5] Huggins, C., and Dao, T. L-Y.: Adrenalectomy and Oophorectomy in Treatment of Advanced Carcinoma of Breast, J. A. M. A. **151**: 1388 (April 18) 1953.

[6] West, C. D., and others: Effect of Bilateral Adrenalectomy upon Neoplastic Disease in Man, Cancer **5**: 1009, 1952. Pearson, O. H., and others: Clinical and Metabolic Studies of Bilateral Adrenalectomy for Advanced Cancer in Man, Surgery **34**: 543 (Sept.) 1953. Randall, H. T.: Evaluation of Adrenalectomy in Man: Physiologic Changes and Effect on Advanced Neoplastic Disease, Bull. N. Y. Acad. Med., to be published.

Perhaps of more significance are the cases in which there was lack of correlation, namely, cases of fairly well-differentiated tumors that failed to respond and anaplastic tumors that did respond.

Since the adrenal cortex is known to be a source of estrogen, it is of interest to consider whether adrenalectomy brings about improvement by removal of another source of estrogen. All but one of our patients had surgical oophorectomy months to years prior to adrenalectomy, and the response to castration has been carefully evaluated. Adrenalectomy has been performed only in patients with objective evidence of advancing disease. Response to castration has been correlated with subsequent response to adrenalectomy in 10 patients for whom adequate data were available (table 2). Of four patients who failed to respond to castration, none responded to adrenalectomy. Of six patients who had objective remissions following oophorectomy, three had objective remissions following adrenalectomy, and in two others some alteration in tumor growth was observed after adrenalectomy. The data indicate that failure to respond to castration means failure to respond to adrenalectomy, but more observations are needed before a final conclusion can be drawn.

Table 2.—*Response* of Patients with Breast Carcinoma to Androgen, Castration, and Adrenalectomy*

Patient	Response to Androgen	Response to Castration	Response to Adrenalectomy
1.	+	+	+
2.	+	+	+
3.	—	+	+
4.	—	+	0 †
5.	+	+ ‡	0 †
6.	+	+	0
7.	0	0	0
8.	—	0	0
9.	—	0	0
10.	—	0	0

* The + indicates an objective remission was obtained; the 0 that no remission was obtained; and the — that androgen was not given.

† These patients had regression of skin and bone metastases with simultaneous progression of liver metastases.

‡ In this case x-ray castration was induced.

EFFECT OF CORTISONE ON ADVANCED BREAST CANCER

Clinical trials of corticotropin (ACTH) and cortisone for the treatment of advanced breast cancer have previously been carried out in a few patients by some of us and by others without any beneficial effects being obtained. We have recently observed three patients who have obtained objective and symptomatic remissions from administration of cortisone in doses of 200 to 300 mg. per day. All three patients had been surgically castrated without benefit. All of these patients had osteolytic metastases and marked hypercalcuria and hypercalcemia. Administration of cortisone brought about prompt subsidence of hypercalcemia, and the urinary calcium excretion decreased to normal levels in the three patients. These changes in calcium excretion were associated with prompt clinical improvement and relief of pain. The remissions had lasted for two months, and the patients were still receiving treatment at the time of writing.

The calcium excretion data in one of these patients are presented in figure 3. This is the same patient who was studied before and after surgical castration and during administration of estrogen (fig. 2). These prior studies indicated that the patient had a nonestrogen-dependent type of mammary cancer. It was thought unlikely that this patient would respond to adrenalectomy on the assumption that adrenalectomy brings about improvement by removal of a source of estrogen. Following adrenalectomy, however, there was a prompt decline in urinary calcium excretion to normal levels, and this was associated with symptomatic improvement. Three weeks after adrenalectomy, hypercalcuria and hypercalcemia reappeared, and there was an exacerbation of symptoms. Estrogen was administered in the hope of inducing a remission, but after four days acute adrenal insufficiency developed. Intravenous free hydrocortisone therapy brought about a prompt recovery from the adrenal crisis. The possibility was considered that the improvement following adrenalectomy was due to the large amounts of cortisone administered rather than to the removal of the adrenal glands. On this basis, cortisone administration was continued in doses of 300 mg. and then 200 mg. per day and estrogen administration was stopped. With this therapy hypercalcemia promptly subsided, and urinary calcium excretion again declined to normal levels. These changes in calcium excretion were associated with marked symptomatic im-

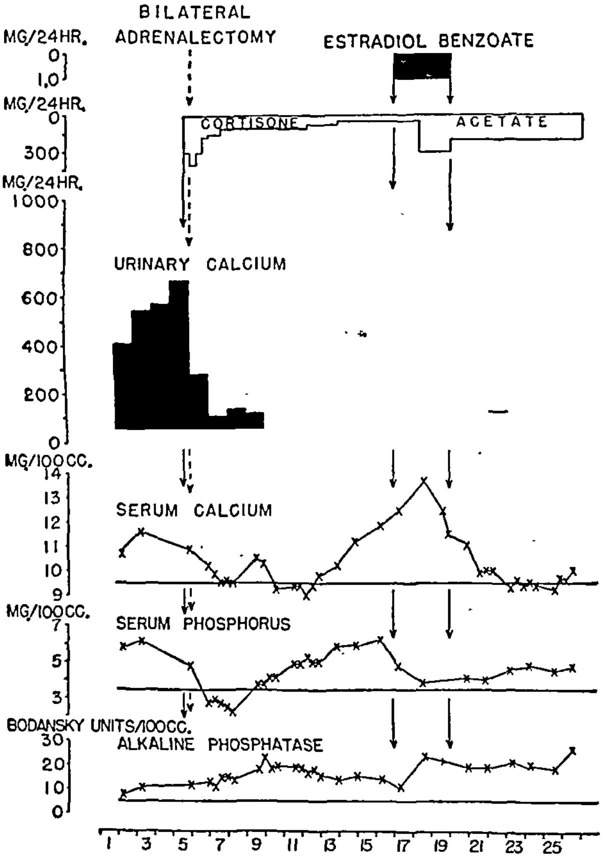

Fig. 3.—Changes in urinary calcium, serum calcium, serum phosphorus, and serum alkaline phosphatase in a patient with osteolytic metastases.

provement. Cortisone therapy is being continued at the present time, and the patient remains clinically improved.

These observations suggest that cortisone may be a useful addition to our therapeutic armamentarium for patients with advanced breast cancer. Further trials of cortisone therapy are indicated, particularly in those patients who fail to respond to the established forms of endocrine therapy.

COMMENT

Calcium excretion studies in patients with osteolytic metastases from breast carcinoma provide a sensitive, objective measure of the rate of tumor growth. These studies are useful not only for investigative purposes but in the selection and evaluation of all chemotherapy for these patients. Certain other biochemical changes occur when remission and exacerbation of tumor growth occur but are less specific than changes in urinary calcium excretion. Hypercalcemia is indicative of rapid bone destruction; however, the serum calcium does not rise above normal until the urinary calcium excretion exceeds 500 mg. per day. Thus, bone destruction may be of considerable magnitude in the presence of a normal serum calcium. The serum phosphorus is usually elevated (5 mg. per 100 cc.) in the presence of active osteolytic disease. The serum phosphorus usually returns to normal (3.2 mg. per 100 cc.) when remission is induced by any means. The cause of these changes in serum phosphorus is not known. When a remission is induced in patients with osteolytic bone disease, the serum alkaline phosphatase level usually rises within two weeks, remains elevated for several weeks, and then returns to normal. This change in alkaline phosphatase is indicative of increased osteoblastic activity.

The demonstration that there is a type of breast cancer in women that depends on estrogen for maintenance of its growth rate provides a physiological basis for treatment. Surgical oophorectomy is the first treatment of choice, since it removes a major source of estrogen. Remissions of many months' duration are regularly obtained in the estrogen-dependent type of breast cancer. Surgical castration is preferred over x-ray castration, because the degree of suppression of ovarian function by radiation is uncertain. When relapse occurs following surgical castration, adrenalectomy would appear to be the next therapy of choice in this type of breast cancer. If it can be established that adrenalectomy brings about improvement by removing another source of estrogen, a physiological basis for this treatment will have been established.

When relapse occurs following adrenalectomy, testosterone therapy is worthy of trial. We have observed an objective remission from testosterone administration in two patients who had previously responded to oophorectomy and adrenalectomy. The mechanism by which testosterone induces remissions in women with breast cancer is not known. From table 2 it is apparent that it will induce remissions in the estrogen-dependent type of mammary cancer before oophorectomy and after oophorectomy and adrenalectomy.

Whether testosterone works by opposing the effect of estrogen on tumor growth cannot be answered at the present time. One experiment has been performed in which testosterone was administered simultaneously with estrogen to a patient with an estrogen-dependent tumor to determine whether testosterone would prevent the accelerating effect of estrogen on tumor growth. In this patient testosterone failed to prevent the stimulating effect of estrogen on tumor growth. Further studies are required, however, before conclusions can be reached on the mechanism of action of testosterone.

Relapses in patients whose adrenals have been removed may be due to the fact that bilateral adrenalectomy does not constitute total adrenalectomy in many patients. Graham [7] has demonstrated accessory adrenal cortices in the region of the celiac axis in 33 of 100 consecutive autopsies at Memorial Center. Cortisone maintenance therapy has been withdrawn in 12 patients after adrenalectomy to determine whether accessory adrenal cortical tissue, if present, was sufficient to maintain life. Ten of the 12 patients went into adrenal crisis within three to seven days, indicating that, if accessory adrenal tissue were present, it was functionally inadequate to maintain life. Two of the 12 patients were maintained for several weeks without any hormonal replacement therapy. They experienced only moderate asthenia and anorexia. These observations suggest that functioning accessory adrenal cortical tissue was present in these patients. Hypophysectomy is being explored as a possible means of completely suppressing all adrenal cortical function.

It is of considerable importance to determine whether an estrogen-dependent mammary cancer will maintain its estrogen dependence throughout the evolution of its growth in the individual patient, or if it will lose its estrogen dependence during the progress of its growth. This can be determined by testing the sensitivity of the tumor to estrogens at serial stages in its growth. If the tumor eventually loses its dependence upon estrogen, then antiestrogen therapy would no longer be effective and other therapeutic approaches might be effective in controlling growth. If the tumor does not lose its estrogen dependence, then adequate antiestrogen therapy might be expected to produce long-term control of this disease.

There is no well-defined physiological basis for the treatment of patients with the nonestrogen-dependent type of mammary cancer. Pharmacological doses of estrogen will induce objective remissions in 40 to 50% of postmenopausal women with breast cancer. The mechanism of action of estrogen under these circumstances is not known. Our observations that many premenopausal women have a nonestrogen-dependent type of mammary cancer suggest that pharmacological doses of estrogen are worthy of more extensive trial in these younger patients. Although we have seen slight inhibitory effects from estrogen administration in these young patients (fig. 2), we have not obtained a worthwhile, objective remission with estrogen therapy in these patients.

Our observations that pharmacological doses of cortisone can induce objective remissions in patients with advanced breast cancer provide an additional therapeutic approach. Although these results are preliminary, the striking response obtained in three patients indicate that worth-while palliation may be obtained with the use of cortisone. It has not been determined that the beneficial effects of cortisone are limited to the nonestrogen-dependent type of mammary cancer, and studies of the effects of cortisone in patients with the estrogen-dependent type of breast cancer are indicated. Prolonged administration of large doses of cortisone will induce osteoporosis and may inhibit bone healing in patients with osteolytic tumors. Testosterone will be administered in combination with cortisone to prevent the osteoporotic effect of the cortisone and to determine whether the tumor-inhibiting effect of the cortisone will still be obtained. Further studies are required to determine whether testosterone therapy per se will induce remissions in patients with nonestrogen-dependent mammary cancer.

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[7] Graham, L. S.: Celiac Accessory Adrenal Glands, Cancer 6: 149, 1953.

SUMMARY

Measurement of urinary calcium excretion in patients with osteolytic metastases from breast carcinoma provides a sensitive, objective index of the rate of tumor growth. Studies of the effects of ovarian function on the growth of mammary carcinoma in women have revealed that there are two types of breast cancer. One type is dependent upon estrogen for maintenance of its growth rate; the other type does not depend on estrogen. Surgical castration induces objective remissions of many months duration in patients with estrogen-dependent mammary cancer. Bilateral adrenalectomy following surgical castration induces further objective remissions in patients with estrogen-dependent breast cancer. Patients with nonestrogen-dependent breast cancer are not benefited by castration and probably not helped by adrenalectomy. Cortisone in doses of 200 to 300 mg. per day has induced objective remissions in three patients with nonestrogen-dependent mammary cancer for a period of two months.

444 E. 68th St. (Dr. Pearson).

Treatment of Hypertension with Drugs.—The treatment of hypertension should be undertaken only when that disease under observation represents a hazard to a patient's life or health. Drug therapy is usually directed at the neurogenic factor. A variety of drugs is available for blocking the motor synapses and nerve endings concerned in the excessive sympathetic nerve discharge believed to be a factor in hypertension. For the best results this should be defined by testing procedures in advance of and during treatment. The limiting factors are usually tolerance and side actions. At the cortical level, barbiturates are the most useful drugs, although these may be replaced eventually by Rauwolfia serpentina. At the hypothalamic level, l-hydrazino-phthalazine and protoveratrine are the most effective, whereas at the ganglionic level, hexamethonium bromide or chloride is the drug of choice. Parenteral administration of this drug is preferred to oral administration because of the inherent serious dangers of the latter. Block of sympathetic nerve endings, smooth muscle or of capillaries is at present of minimal practical value in the treatment of hypertension. Salt depletion by diet and dietary adjuvants appears to affect the non-neurogenic or intrinsic factors in hypertension. Sympathectomy should be reserved for patients with a large neurogenic element who fail to respond to adequate medical therapy. In many cases, judiciously combined treatment provides the most satisfactory results.—Milton Mendlowitz, M.D., The Treatment of Hypertension with Drugs, *Annals of Internal Medicine*, November, 1953.

CLINICAL NOTES

RESULTS OF TREATMENT OF CALCIFIC TENDINITIS WITH ADENOSINE 5-MONOPHOSPHATE

PRELIMINARY REPORT

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and
R. E. Verdon, M.D., Cliffside Park, N. J.

Chronic calcific tendinitis,[1] in contrast to the acute form of the disease, is generally regarded a difficult therapeutic problem.[2] Encouraged by the good results Rottino [3] obtained by using adenosine 5-monophosphate in all types of "tendinitis" and "bursitis," we decided to evaluate this drug in the usually stubborn, chronic cases of tendinitis associated with calcific deposits. In our past experiences treatment in this type of case had proved difficult with a variety of methods, used serially or in combinations.

METHOD OF STUDY

Our material for study was gathered from clinic and private cases, chiefly the latter. Only cases that rigidly fulfilled the clinical and x-ray criteria of calcific tendinitis were selected. Two essential criteria common to all cases were (1) disability and limitation of abduction, rotation, or elevation either in degree or by pain of varying severity caused on these attempted motions and (2) obvious calcific deposits demonstrated on roentgenograms in the region of one of the short rotator muscles of the shoulder, which was usually presumed to be in the supraspinatus.

Arbitrarily, we considered tendinitis "chronic" if complaints had persisted for two months or more without any subjective or objective improvement. Most of our patients had their disabilities for over six months. About a third of these had a definite severe acute attack at the onset and admitted some degree of spontaneous or therapeutic improvement of both pain and disability during the first few days to several weeks, with stabilization of their pains or disabilities from that point onward. The majority of patients could not recall an exact onset but likewise had not observed any essential change of their complaint-disability patterns over periods of months to years.

In most cases other confirmatory symptoms, signs, and history left very little doubt about the diagnosis.

From the Medical Clinic of Englewood Hospital, Englewood, N. J.

This study was supported in part by a grant from the Ernst Bischoff Company, Inc., Ivoryton, Conn., who also supplied the gelatin solution of adenosine 5-monophosphate (sustained-action My-B-Den).

[1] Terms often used synonymously with calcified tendinitis include subdeltoid bursitis, subacromial bursitis, calcified bursitis, calcareous tendinitis, periarthritis, bicipital tenosynovitis, peritendinitis, tendinitis of the short rotators, frozen shoulder, scapulohumeral periarthritis, the painful shoulder, and many others.

[2] (*a*) Treatment of Bursitis, Queries and Minor Notes, J. A. M. A. **146**: 162 (Aug. 25) 1951. (*b*) Treatment of Bursitis, Queries and Minor Notes, *ibid.* **149**: 978 (July 5) 1952.

[3] Rottino, A.: Adenosine-5-Monophosphate in Treatment of Tendinitis, Journal-Lancet **71**: 237-238 (June) 1951.

Localized tenderness in the upper anterior deltoid muscle area was found rather frequently, but as a rule the area was not as exquisitely tender as in the acute cases. The inability to sleep well or at all in the supine position was universally complained of. In only three cases was any other syndrome found that undoubtedly contributed to the symptoms and disability, but the large hard calcific deposits found on roentgenograms compelled us to treat and include these patients in this report.

The dosage schedule used was 1 cc. of adenosine 5-monophosphate (20 mg.) in a gelatin solution (My-B-Den) given intramuscularly daily or every other day. Controls were given either 1 cc. of saline solution or 1 cc. of the plain gelatin solution without the adenosine 5-monophosphate. No other therapy was employed in either group except in the three cases in which an associated syndrome was present. Even in these cases, only injection therapy was used at first, until evaluation could be made.

Ratings of therapeutic results of 1 to 4 + were based on loss of pain and significant improvement in abduction, rotation, or elevation of the arm. A large wall compass chart was used for measuring abduction and elevation movements. To counterbalance the shortcomings of this evaluation method, all results below a 3 + were discarded as failures, regardless of clinical impression. As a rule at least two to five injections were routinely given after a satisfactory or stabilized result appeared. All patients were seen at least once weekly for evaluation. Most of the injections were given by our office nurses or the public health nurses in the clinics. All patients had been followed for at least 11 months at the time of writing, and some had been observed for over 2 years.

A total of 36 patients with chronic tendinitis were treated with adenosine 5-monophosphate, including 15 men and 21 women, with an average age of 49 years. Thirteen patients with chronic tendinitis were treated as controls, including 3 women and 10 men, with an average age of 47.8 years. Eleven of the 13 controls were later treated with adenosine 5-monophosphate and are included in the total of 36 patients treated. In the adenosine 5-monophosphate group, 31 of 36 patients responded satisfactorily subjectively and objectively (3 to 4 +) with 3 to 14 injections, or an average of 9 injections. There were six recurrences in this group, and four of these patients were re-treated with adenosine 5-monophosphate. The results on re-treatment were remarkably similar in each of these cases. The recrudescences in the remaining two cases have been so mild that neither the patients nor we had felt re-treatment was urgent to the time of writing. Only 1 of the 13 control patients responded to placebo injections (saline solution). Eleven of these who did not respond after an average of 16 injections promptly responded to adenosine 5-monophosphate with only one exception.

COMMENT

In the chronic cases selected for this study a multiplicity of therapies had already been employed before we saw the patients or the patients had waited long enough to become worried about their disabilities. Nine of the 36 patients were awaiting surgery as a last resort, but the relief obtained with adenosine 5-monophosphate was so gratifying that operation was cancelled in all nine cases.

The administration of adenosine 5-monophosphate has proved to be easy, safe, and free of side-reactions. No special skill or equipment is necessary for injection of the drug other than a 20 gage needle to permit easier flow of the gelatin solution. Not one severe reaction of any kind was encountered with intramuscular administration of the drug.

Minor complaints of diuresis, flushing, or a slightly painful and reddened site of administration were elicited from a minority of patients, but in no case was it necessary to discontinue therapy. The complaints of diarrhea, dizziness, and headache reported [4] with the use of sublingual tablets were not encountered with the intramuscular route.

An apparent "flare-up" of symptoms and disability on the 5th to the 10th day of treatment was noted in almost half the cases in which adenosine 5-monophosphate has been used. This exacerbation was followed in a day or two by remarkable subjective and objective overall improvement. In none of the control cases did this reaction occur, but when 11 of this same group were later treated with adenosine 5-monophosphate, 6 clearly passed through this stage. We have come to regard this "reaction" as a favorable prognostic sign.

Similar "flare-ups" have been observed in acute calcific tendinitis just prior to dramatic subsidence of pain. Codman [5] related this phenomenon to the extrusion and fragmentation of the calcific deposits into the bursal sac. However, this hardly seems the explanation in our chronic cases, inasmuch as serial roentgenograms have failed to show any decrease in the size, shape, or density of the calcific deposits or any changes in position.

The mechanism whereby adenosine 5-monophosphate causes subsidence of the tendinitis, of the pain first and later the disability, can only be speculated on at this time.[6] Adenosine 5-monophosphate is involved in so many basic life processes that much more research is needed for correlation of our present clinical and biochemical knowledge.

SUMMARY AND CONCLUSIONS

In 36 typical cases of chronic calcific tendinitis of the shoulder 20 mg. (1 cc.) of adenosine 5-monophosphate in a gelatin solution (My-B-Den) was given intramuscularly daily or every other day. In 13 similar control cases 1 cc. of plain gelatin solution or 1 cc. of saline solution was given. No other therapy was used in either group. Therapeutic results classified on the basis of 1 to

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[4] Matt, J. G.: Treatment of Idiopathic Pruritus Ani with Adenosine-5-Monophosphate, South. M. J. 44: 537-542 (June) 1951. Susinno, A. M.: Control of Pruritus with Adenosine-5-Monophosphate, Am. Pract. & Digest Treatment 2: 491-495 (June) 1951.

[5] Codman, E. A.: The Shoulder, Boston, Thomas Todd Company, 1934, pp. 178-215.

[6] Robinson, F., and Hughes, R. A.: Effects of Adenine Compounds on Electrocortical Activity, J. Neurophysiol. 14: 387-398 (Sept.) 1951. Rottino, A.; Boller, R., and Pratt, G. H.: Therapeutic Action of Muscle Adenylic Acid on Ulcers and Dermatitis Associated with Varicose or Phlebitic Veins: Preliminary Report, Angiology 1: 194-200 (April) 1950.

4 + revealed that in 31 of 36 chronic cases there was a satisfactory response subjectively and objectively (3 to 4 +) with 3 to 14 injections of adenosine 5-monophosphate, or an average of 9 injections. Only one of 13 control patients responded to placebo injections. Eleven of these 13 were later treated with adenosine 5-monophosphate, and 10 obtained good to excellent results (3 to 4 +). The unusually good results in chronic cases of calcific tendinitis for which drastic or prolonged methods of therapy are frequently being resorted to suggest that adenosine 5-monophosphate should be more extensively evaluated as a simple, safe therapeutic modality in calcific tendinitis that is adaptable for routine office use.

ADDENDUM

Since the original article was written, an additional 17 patients with chronic calcific tendinitis have been treated with adenosine 5-monophosphate. Satisfactory results have been obtained in 13 and failures in 4, according to the same therapeutic criteria. All of the first 36 patients have been followed. In this group two additional patients have had recurrences with excellent results on re-treatment. One other patient who had a recurrence two months after satisfactory results were obtained with adenosine 5-monophosphate refused another course of therapy and has since undergone surgery. She is the only one of the series of 53 thus far who has done so.

29 Roff Ave. (Dr. Susinno).

COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. Stormont, M.D., *Secretary.*

Dextran.—Expandex (Commercial Solvents).—Gentran (Baxter).—Plavolex (Wyeth).—Dextran is a water-soluble, high molecular weight glucose polymer produced by the action of Leuconostoc mesenteroides on sucrose. The marketed product has an average molecular weight of about 75,000.

Actions and Uses.—Dextran, when partially hydrolyzed to suitable viscosity and fractionated to provide an average molecular size of 75,000, is useful for intravenous administration in a 6% solution of isotonic sodium chloride to expand plasma volume and maintain blood pressure in emergency treatment of hemorrhagic and traumatic shock. It should neither be regarded as a "substitute" for whole blood or its derivatives essential in restoring blood proteins, nor for combating anemia secondary to hemorrhage or severe traumatic injury such as extensive burns and fractures. Although approximately osmotically equivalent to serum albumin, 6% dextran injection in isotonic sodium chloride solution is not suitable for use in the treatment of edema secondary to hypoproteinemia. Decrease in total serum proteins and hematocrit values, persisting for 6 to 24 hours, is a characteristic response to dextran injection. This is attributed partly to hemodilution, although hematocrit values occasionally return to normal before the total serum proteins. The effect on blood volume of a single injection of 500 to 1,000 cc. of a 6% solution usually persists for 24 hours.

Dextran is excreted in the urine to the extent of 30 to 50%, and studies in progress indicate that the remainder is metabolized in the body. Specific gravity of the urine is increased as a result of renal excretion, but this returns to normal after dextran has been eliminated. When given to patients not in shock, 500 cc. of the 6% solution produces no alteration in body temperature, pulse rate, respiration, or blood pressure, during or after the period of injection. Vital capacity is also unchanged. As a result of expanding plasma volume, venous pressure is increased from 10 to 30 mm. H_2O and cardiac output is concurrently elevated. Renal and hepatic functions are not altered by dextran.

Virtually no adverse reactions have been observed after repeated injections of dextran; however, this polysaccharide has the apparently inherent tendency to produce reactions of an antigen-antibody type in certain human subjects. Such reactions are of low incidence and mild character in adequately hydrolyzed and refined preparations, which provide an average molecular size approximating that of serum albumin. As solutions of dextran do not require refrigeration, they are easily stored and ready for immediate use in emergencies.

Dosage.—Dextran is administered intravenously as a 6% solution in isotonic sodium chloride. The usual dose is 500 cc. infused at the rate of 20 to 40 cc. per minute so that the total amount is administered over a period of about 15 to 30 minutes. Repeated injections may be given when necessary if blood or its derivatives are not available or subsequently indicated. For hemorrhage, the dosage should be limited to an amount sufficient to elevate the systolic blood pressure to not more than 80 to 85 mm. Hg to avoid the production of further bleeding and dangerous dilution of the circulating blood. For shock associated with hemorrhage, severe burns, and traumatic injuries, blood has preference over plasma or artificial colloids.

Abbott Laboratories, North Chicago, Ill.

Solution Dextran 6%: 250 and 500 cc. bottles. The 500 cc. containers are available with or without Venoset (disposable venoclysis unit). An isotonic solution containing 60 mg. of dextran in each cubic centimeter.

Baxter Laboratories, Inc., Morton Grove, Ill.

Solution Gentran 6%: 250 and 500 cc. bottles. The 500 cc. containers are available with or without disposable syringe. An isotonic solution containing 60 mg. of dextran in each cubic centimeter.

Commercial Solvents Corporation, New York.

Solution Expandex 6%: 250 and 500 cc. bottles. The 500 cc. containers are available with or without disposable syringe. An isotonic solution containing 60 mg. of dextran in each cubic centimeter.

Hyland Laboratories, Los Angeles.

Solution Dextran 6%: 250 and 500 cc. bottles. The 500 cc. containers are available with or without disposable syringe. An isotonic solution containing 60 mg. of dextran in each cubic centimeter.

Wyeth Laboratories, Inc., Philadelphia.

Solution Plavolex 6%: 500 cc. bottles. An isotonic solution containing 60 mg. of dextran in each cubic centimeter.

Hyaluronidase (See New and Nonofficial Remedies 1953, p. 321).

Wyeth Laboratories, Inc., Philadelphia.

Solution Wydase: 1 cc. and 10 cc. vials. A solution containing 150 turbidity reducing units of hyaluronidase in each cubic centimeter. Preserved with 0.01% thimerosal. Stabilized with 0.1% disodium ethylenediamine tetraacetic acid and buffered with 0.14% sodium phosphate. U. S. trademark 542,829.

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INACTIVITY OR EMPLOYMENT FOR OLDER WORKERS?

In our aging population the gap between retirement and death is widening. In 1900 it averaged about two and a quarter years. This had doubled by 1950 and is still increasing.[1] The reason for this is a combination of two factors: the saving of more lives between birth and age 35 and the policy in many firms of compulsory retirement at an arbitrary age, usually 65. There is a growing recognition that a fixed retirement age is unprofitable for the employer, frustrating for the employed, and eventually disastrous to the national economy. Although some workers become inefficient at 65 or younger, a fixed retirement age works a hardship on the productive majority along with the unproductive minority. The argument that older workers should be cleared out to make way for younger ones is only another way of saying that there are more workers than jobs,[2] and in any event retirement for this reason does nothing to provide for the older worker's need for employment. A high income tax and continuing inflation are making it economically difficult for most persons to retire completely at any age.

Few persons realize to what extent this problem is tied up with the increase in the prevalence of suicides with advancing years. Batchelor and Napier [3] found that 20% of those who were admitted to the hospital because of attempted suicide were over 60 years of age, and the motives included physical illness, mental incapacity, idleness, boredom, loneliness, and inability to adapt to changed circumstances. Among the measures recommended for preventing these suicidal attempts they stressed encouraging older persons to continue in their occupation as long as possible, to develop collateral interests, and to play as active a part as possible in group activities of some sort.

The practice of requiring retirement at a fixed age is undoubtedly based on a belief that past that age most persons are relatively unproductive, yet exceptions are so numerous that to list only those persons over 70 who are still active and have a national or international reputation would fill a large book. The key to the difficulty lies in the absence of an easy way to measure physiological age. Although it is true that aging workers suffer a gradual diminution in strength and in the speed of their muscular movements, these handicaps are more than compensated for by an increase in skill or accuracy and in reliability and conscientiousness.[4] In one factory in the United States a division made up entirely of old and physically handicapped workers rated near the top in production and had a reject rate only half as high as that for younger healthy workers.[1] Furthermore, their absenteeism was less than that of workers between 25 and 29 years of age, largely because of their superior safety record. The productivity of clerical employees suffers with advancing years even less than that of those who derive their living from manual skills.

In order to prevent the current waste in productivity in our older workers some means of recognizing when their productivity starts to decline must be established. This is made the more difficult by the insidiousness of the slowing up process, but in actual practice the problem is being met in a variety of ways. Day-to-day observation by the employee's immediate supervisor is the commonest.[5] Other clues are increasing absenteeism, a worker himself admitting that he is unable to keep up and requesting a modification of his work schedule, individual output records, reports from other employees, reports from the nurse that an employee has become a frequent visitor to the dispensary, and the finding of warning signs on a periodic physical examination. There is no reason why a company should not make use of several or all of these methods. Certainly the industrial physician can play an important role not only in conducting periodic examinations (especially of employees over 40) but also in relating pathophysiological findings to exertion and the ability to perform certain tasks. He can also give valuable advice concerning selective placement when it becomes necessary to transfer an employee to another kind of work, and frequently he can prescribe a regimen that will retard the process of deterioration or minimize its effects.

Many workers reach the age of 65 without showing any signs of slowing up, and they should be allowed to do some work. If the signs of aging are beginning to become apparent much can be done to salvage the productivity of the worker. A few who are outstanding in production departments, for example, can be taken off production and made foremen or supervisors. Others can be placed where the importance of their increased accuracy outweighs the demand for speed. It has been observed that the gradual decline of earning capacity due to slowing up where the rate of pay is based on piecework is less upsetting to the emotions of older workers than the rigid pacing of a conveyor belt coupled with an hourly wage.[4] Anything that spares these workers a feeling of frustrations adds productive years to their lives. In some cases a worker can be kept on at reduced hours or in work that is similar to his usual tasks but less complex. The problem is less complicated for executives and professional persons in categories that allow for delegating a

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1. Franco, S. C.: The Industrial Physician and the Older Worker, Geriatrics 8: 36-40 (Jan.) 1953.
2. Klumpp, T. G.: Employment of the Older Worker, Pub. Health Rep. 68: 20-22 (Jan.) 1953.
3. Batchelor, I. R. C., and Napier, M. B.: Attempted Suicide in Old Age, Brit. M. J. 2: 1186-1190 (Nov. 28) 1953.
4. Welford, A. T.: Extending the Employment of Older People, Brit. M. J. 2: 1193-1197 (Nov. 28) 1953.
5. Mahoney, T. A., and Lindbom, T. R.: Practices of Minneapolis Firms in the Utilization of Older Employees, J. Gerontol. 8: 202-206 (April) 1953.

part of the usual tasks to an assistant, but many such persons do not avail themselves of this means of relief because they wish to prove to themselves that they are as good as they ever were or because they are perfectionists who believe that a job is not well done unless they do it themselves. Allotting work to others is an art that in the interest of self-preservation these persons should learn while they are still young enough to be receptive to new ideas and still patient enough to train their subordinates.

When a person reaches that stage in life when a modification of his activities becomes imperative it is sometimes wise or even necessary to change over to an entirely different type of work. This may involve the learning of new skills, and thus a complication is introduced. Learning ability varies greatly with the individual, but in general theoretical studies are harder to master after the age of 30 is passed. Loss of memory for recent happenings, including yesterday's instruction, is the greatest hazard to learning in old age. Tasks that can be demonstrated are more easily learned by most old persons than abstract facts. If a person knows or suspects that change to another type of work is apt to become mandatory at 60 or 65, he is wise to embark on his second career a few years earlier, because he is then in a better condition to learn his new duties and he has a better chance of finding an acceptable opening.[6] Many a man puts off starting his new career until it is too late and ends up in a rocking chair by the stove.

A survey of 34 firms in Minneapolis [5] revealed that none had a written policy for utilizing the productive capacity of their older employees; two had a general policy that included all physically handicapped workers; *and over half did not even have a fixed unwritten policy.* A retirement policy in addition to setting the conditions of retirement should state how older workers may be profitably kept on the job and how their status is to be determined. Some writers have made a plea for extending the compulsory retirement age from 65 to 68, but this is mere temporizing. It would still find many employable persons shoved out of a job they are capable of doing before such a step was necessary. The best solution is the creation of a panel to include one or more high level executives and the industrial physician to judge each case on its merits and determine whether the worker should continue in his present status, go on a modified schedule, transfer to a less demanding job, or be retired. Such a panel would in some situations have to get advice from the employee's immediate supervisor, the company's personnel director, or the local union. A firm takes great pain to choose whom it will hire. There is no reason why it should not concern itself equally with the problem of whom it will retire.

The employment of older persons may be improved by restudying methods of work, thereby making it possible for the employee who is slowing up (or down) to continue to work without harassment. This may involve the redesign of some machines. A restudy of training methods for those who must switch to an entirely new type of work will also contribute to the solution of the problem. With greater care and planning we can salvage much valuable productivity that is now being wasted.

SCALENE NODE BIOPSY

Diagnosis of intrathoracic lesions has been much extended during the past decade by the introduction of improved roentgenographic methods, of cytological study of the sputum, bronchoscopy, bronchoscopic biopsy, thoracoscopy, and exploratory thoracotomy.

Daniels [1] in 1949 suggested a diagnostic method that consists of a biopsy of scalene lymph nodes. These nodes are a part of the chain of the deep mediastinal lymph nodes and therefore are quite likely to be involved in the same pathological process. The method involves a rather simple operation that can be performed with the patient under local anesthesia. A short incision is made just above and parallel to the clavicle and lateral to the external border of the sternocleidomastoid muscle. The clavicular portion of the sternocleidomastoid may be divided if necessary. This muscle is then retracted medially, and the fat filled space underlying the anterior scalenus muscle is exposed. Several lymph nodes are usually found in this fat pad; these are removed for microscopic study. It is possible to follow the subclavian and internal jugular veins down into the upper mediastinum to remove any nodes that may be encountered. The procedure is essentially that used for phrenic nerve crush. When the operation is done on the left side, care should be taken not to injure the thoracic duct.

In the five cases reported by Daniels, diagnosis of Boeck's sarcoid was established in two cases; the finding of a metastatic carcinoma in three cases prevented a major surgical exploration of the chest. In the fourth case there was an inoperable carcinoma of the lung with metastasis in the scalene lymph nodes. The major procedure could have been avoided if scalene node biopsy had been first performed. The fifth case revealed a combination of silicosis and sarcoidosis.

Weiss and co-workers [2] observed a man 48 years old with mild subjective pulmonary symptoms but with extensive roentgenographic evidence of involvement of both lungs. Sputum cultures and tuberculin tests were negative on repeated examinations. Microscopic examination of a scalene node established the diagnosis of Boeck's sarcoid. Johnson and MacCurdy [3] studied the case of a young adult who had no subjective symptoms but who presented on roentgenographic chest examination lung fields studded with calcific densities measuring 1 to 3 mm. in diameter, with soft nodular prominence of both hilar shadows. Lymph nodes obtained from the fat pad lying over the anterior scalenus muscle and cultured on Sabouraud's medium and on blood cystine plates revealed an organism with the morphological characteristics of Histoplasma capsulatum. Storey and Reynolds,[4] in a discussion of the various biopsy tech-

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niques for diagnosis of intrathoracic lesions, cite three cases in which the use of the scalene lymph node biopsy established the diagnosis of Hodgkin's disease, Boeck's sarcoidosis, and carcinoma respectively.

Shefts and co-workers[5] report in a recent communication on a series of 187 patients in whom the Daniels' procedure was performed. In 67 of the patients biopsy material presented evidence of the identity of associated intrathoracic disease that had previously been undiagnosed despite application of the generally used nonsurgical diagnostic methods. There were 38 instances of Boeck's sarcoid, 13 of bronchogenic carcinoma (9 undifferentiated carcinoma and 4 adenocarcinoma), 8 of tuberculosis, 2 of lymphosarcoma, 2 of Hodgkin's disease, 1 of histoplasmosis, and 3 of metastases of tumor to the lung. Complications were mainly limited to involvement of the thoracic ducts. The left thoracic duct was torn once and the right twice.

Scalene node biopsy should prove to be particularly valuable in instances of hilar and mediastinal roentgenographic enlargement, particularly when the diagnosis is difficult to establish by other laboratory means. The histological and cultural study of scalene nodes should reveal many cases of Boeck's sarcoid, tuberculosis, lymphosarcoma, and Hodgkin's disease. Such biopsy may also establish the microscopic type of tumor, thus enabling the clinician to detect the primary site of the neoplasm.

CATARACT AND SUNLIGHT

The relationship of exposure to sunlight to the development of cataract is unsettled. The cornea absorbs heat waves longer than 20,000 Å. The shorter waves are partly absorbed and partly transmitted, with transmission almost complete from the beginning of the visible red waves down to the ultraviolet region. Below this wave length absorption by the cornea is again marked. Thus only a limited portion of sun rays penetrate the cornea to have any possible effect on the lens.

Several authorities have suggested that ultraviolet rays contribute a considerable part in the pathogenesis of cataract in India and in the Arctic. Additionally it is known that farmers and other rural workers have a higher incidence of cataract than persons not exposed to such intense sunlight. Further support for this theory is the customary site of the incipient cataract in the lower nasal quadrant. Contrariwise, however, this part of the lens is ordinarily covered by the iris and is therefore protected from sunlight. The ultraviolet light presumably initiates a photochemical reaction that alters the lens proteins, enabling severer changes to supervene slowly.

Cataract has been known for many years to be associated with the exposure of the eye to heat. This has been called the glassworker cataract but is also found in other workers exposed to glowing heat, such as iron smelters, chain makers, tinplate millmen, gold smelters, and machinists. It has not been suggested, however, that the infrared rays of sunlight are responsible for cataract, and most attention has been paid to the ultraviolet rays.

DUODENAL ULCER

The concept that duodenal ulcer is in some way due to the stresses and strains of modern life has continued to interest physicians since Harvey Cushing focused attention on this problem by his paper "Peptic Ulcer and the Interbrain" in 1932. Many physicians have called attention to the high incidence of ulcers in persons whose occupations subject them to continuous mental strain, worry, and anxiety and to the tendency for exacerbations to occur during periods of emotional stress. Dragstedt postulated that these events cause a hypertonus in the secretory and motor fibers in the vagus nerves, resulting in hypermotility and an excessive continuous secretion of gastric juice in the empty stomach, with ulcer formation. The abolition of this hypersecretion and concomitant healing of duodenal ulcer following complete gastric vagotomy in many cases has supported this point of view.

Recently, Gray and his associates[1] suggested an alternate mechanism by means of which chronic stress may play a causative role in duodenal ulcer. Thus it has been postulated that, in response to emotional and systemic stress, the cells of the anterior hypothalamus secrete a humoral substance that stimulates the pituitary gland to release corticotropin. Corticotropin then increases the liberation of adrenal corticoids such as cortisone from the adrenal cortex, and these in turn stimulate the gastric glands to an increased production of pepsin and hydrochloric acid. This theory accounts for the hypersecretion of gastric juice in response to stress by a mechanism independent of the vagus nerve supply to the stomach. Support for the hypothesis of Gray has been provided by a study by Porter, Movius, and French.[2] These investigators found that in the monkey, stimulation of the anterior hypothalamus causes a secretion of gastric juice in the stomach that is prevented by vagotomy. A secretion of gastric juice may also be produced by stimulation of the posterior hypothalamus, and this stimulus seems to be conducted humorally through the pituitary adrenal system. The response to this stimulation occurs later and is prevented by adrenalectomy but not by division of the vagus nerves. If the hypersecretion of the gastric juice in duodenal ulcer patients were due to the adrenal stress mechanism, it would be expected that this hypersecretion would continue after vagotomy, since the stimulating effect of cortisone on the gastric glands persists even after both vagus denervation and extirpation of the antrum. Since hypersecretion in duodenal ulcer patients is abolished by vagotomy, it would appear that this cannot be explained on the basis of the adrenal stress mechanism. However, the occurrence of peptic ulceration after severe burns (Curling's ulcer) and other serious trauma could depend on the pituitary-adrenal stress mechanism, since there is better evidence that such stresses excite the liberation of increased amounts of cortisone by the adrenals. These possibilities are being studied, and positive conclusions cannot now be stated.

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ORGANIZATION SECTION

THE SEVENTH GENERAL ASSEMBLY OF THE WORLD MEDICAL ASSOCIATION

Following is an abstract of the Proceedings of the World Medical Association. A more complete version may be found in the March issue of the *World Medical Journal* (formerly *Bulletin of the World Medical Association*).

The Seventh General Assembly of the World Medical Association convened in the Netherlands Parliament Building at the Hague, from Aug. 31 to Sept. 5, 1953. Delegates and alternate delegates from 33 national medical associations (an increase of 9 over last year) were present. The sessions were also attended by representatives of 22 national and international organizations, including the World Health Organization, International Red Cross, International College of Surgeons, International Labour Organization, and International Social Security Association. About 100 members of the United States Committee, Inc., of the World Medical Association also attended.

The first session was opened by Dr. George Krimpas, Greece, president. In his address of welcome Dr. Krimpas noted the increasing importance of the World Medical Association and the benefits that have resulted from its activities. He warned the delegates of the dangers ensuing from various types of medical social security and closed by asking the delegates and member associations to continue their support of the World Medical Association code of ethics.

His Excellency, Dr. P. Muntendam, secretary of state of the Netherlands, extended greetings from Her Majesty's government. He stated that social and economic goals are achieved only when the highest possible level of health of the population is reached. He added that physicians are in an ideal position to mediate difficulties between patients, the government, and the social security system, as they are cognizant of the health and social welfare of the patient.

The general assembly elected Prof. Dr. Lambert A. Hulst, Netherlands, as president. In his inaugural address Dr. Hulst said that the World Medical Association is an association of the free national medical associations. Its increase in size and strength since its inception is based on the fundamental principle that "society must guarantee the physician independence in his own field." Those who are skeptical of the usefulness of international organizations have become converts of the World Medical Association when they have learned that all countries regardless of size have two votes in the general assembly. In this way each idea or principle is judged on the basis of its own intrinsic value and not by the importance of the country that introduced or supported it. The World Medical Association has no desire to govern the national medical associations; it will make recommendations and suggestions—that is all it can and will do.

On the recommendation of the council, membership was granted to the Indonesian, Brazilian, and Liechtenstein medical associations.

Annual Financial Report

The annual financial report of the United States Committee, Inc., for the year July, 1952, to June, 1953, was received with sincere appreciation to the United States Committee and the American Medical Association with the hope that other national associations will implement similar committees on the basis of this excellent example.

Council Resolutions

Dr. Dag Knutson, Sweden, chairman of the council, presented the annual report of the council. The council with regret informed the general assembly of the death of Dr. Elmer Lee Henderson and proposed the following resolution:

"Dr. Henderson was interested actively in The World Medical Association from its inception, first as a member of the Organizing Committee, then as a Member of the Council and later as its President. Following the completion of his term of office as President, Dr. Henderson was again elected to the Council. He was devoted to The World Medical Association and shared unsparingly of his time and experience. His council will be sorely missed. The Council recommends that this memorial be inscribed in the Minutes of the General Assembly and a copy sent to his family."

This resolution was adopted unanimously.

The council informed the general assembly of the resignation of Dr. Brock Chisholm as director general of the World Health Organization and expressed its appreciation of Dr. Chisholm's cooperation with the World Medical Association during his term of office.

A casual vacancy was created on the council by the death of Dr. Henderson, which in the interim was filled by the appointment of Dr. Austin Smith (U. S. A.).

The council informed the assembly of the recent organization of an International Union of the Medical Press. This organization represents the medical journalists of Latin Europe. As the medical journalist group sponsored by the World Medical Association is rather loosely organized, it would seem justifiable that the World Medical Association secure the cooperation of the International Union. The two groups working in cooperation could be of assistance to medical editors and publishers. The council was instructed to cooperate with the International Union in any way possible.

Report of Secretaries

Asia.—Dr. S. C. Sen of India, secretary for Asia, reported on conditions in that area. He had visited the medical associations in Israel and Pakistan and had been assured of their continued interest in and support of the World Medical Association. He concluded his report by adding that social security in the form of compulsory insurance is now being started in installments in India. Two centers with medical services administered by full-time salaried physicians operating in clinics or dispensaries have been opened. The medical association and its recommendations were completely ignored by the government and I. L. O. The remuneration scale for the physicians is much too low in comparison with the administrative costs. Members of the medical profession has been advised to refuse to accept positions in the government service. Dr. M. D. Penas of the Philippines requested that the progress of the Philippine Medical Association be included in the report. The association is particularly interested in the recommendations of the World Medical Association. In September the Philippine Medical Association will celebrate its 50th anniversary.

Australasia.—Dr. John Hunter, Australia, secretary for Australasia, discussed the current status of the National Health Act, which conforms to the principles of social security as established by the World Medical Association. The minister of health at all times has consulted the medical profession and has on many occasions requested its opinion. In the plan for national health service all costly and lifesaving drugs are free to everyone. This raised the costs of the plan, partly because the profession was uneducated as to the proper use of and partly because of public demand for this type of therapy. The problem was solved through an educational campaign of both the profession and the public. Although all hospitals in Australia are public hospitals and any patient can be admitted to them, a means test is now applied in certain states.

Europe.—Dr. Paul Cibrie of France, secretary for Europe, stressed the importance of physicians, medical organizations, social security groups, and governments meeting together and reaching mutually satisfactory and beneficial conclusions. This goal should be achieved on both a national and international level. He made a plea for the proper recognition of the general practitioner and concluded by discussing a retirement plan for physicians in France. The scheme is supported entirely by the physicians themselves and will enable the retired physician to live in a simple but dignified fashion. A long discussion on the various retirement plans for physicians as functioning in other countries ensued. The delegates agreed that a useful purpose would be served by studying retirement and pension plans for physicians and instructed the council to implement such a study and report back to the assembly.

Latin America.—Dr. J. A. Bustamente, Cuba, secretary for Latin America, stated that two important meetings had been held during the past year. These were the Fourth Pan American Socio-Medical Congress, which considered national plans for medical service and the effect of social security on the responsibilities of medical organization and heard scientific discussions of poliomyelitis and cancer; and the Third General Assembly of the Pan American Medical Confederation, which reached important agreements on social security and medical education.

World Medical Journal

The Planning and Finance Committee recommended that the council be instructed by the assembly to select an editorial board of five members—three members chosen at large as any other council committee and an executive editor, with the secretary general acting as business administrator, ex officio. The editorial board should report to the general assembly through the council. This board should be advisory and should recommend changes in the present format and presentation of the *World Medical Journal.* Associate or contributing editors should be selected by the council after consultation with member associations and should present views from their areas. The general assembly adopted these suggestions and made them effective Jan. 1, 1954.

Planning and Finance

The Planning and Finance Committee through its chairman, Dr. T. C. Routley of Canada, recommended that no general assembly be held in 1955 and that regional meetings be planned for that year in Latin America, Europe, and Australia. This recommendation resulted from consideration of a questionnaire sent to member associations requesting them to estimate the size of their delegation if the 1955 meeting were scheduled in Australia or Cuba—the results indicating that cost of transportation would drastically limit the size of the general assembly. It was proposed that the problem be referred back to the council in the light of the discussion and with instructions to report back to the eighth general assembly. On the recommendation of the committee, the council was instructed to investigate the possibilities of the World Medical Association's assuming active participation in the field of industrial and occupational medicine.

Medical Ethics

Dr. Cibrie, chairman of the Medical Ethics Committee, told the delegates that the committee believed it necessary to amend the association's code of medical ethics by adding a short chapter on "The Duties of Doctors to Society." Dr. Jean Maystre, liaison officer to the International Committee of the Red Cross, supported this recommendation. He pointed out that the Red Cross Geneva Convention is being studied by a number of countries as a means of regimenting and controlling the medical profession in time of war. Furthermore, the subject is being considered by the executive board of WHO in its consideration of international medical law and therefore becomes a matter of some urgency for the World Medical Association. The general assembly directed that the committee be instructed to draft an additional chapter to the code of medical ethics on the social duties of physicians. The World Medical Association should call attention to the fact that the role of the physician in wartime, including the application of general duties, is included in its Code of Ethics. The necessary means for accomplishing its role are a part of the convention established by the International Committee of the Red Cross, the only organization functioning during war and having any authority over belligerents. The World Medical Association emphatically declared that the establishment of an international code of medical ethics is its exclusive rights. Attention was called to the fact that no provision is made for the use of the Red Cross emblem by medical civil defense units, its personnel, materials, and vehicles. The assembly instructed the council to approach the Red Cross on the subject of including these units under the protection of its emblem.

International Pharmacopoeia

The International Pharmacopoeia Committee reported that it had sent a letter to the director general of WHO prior to the Sixth WHO Assembly in May (1) requesting that WHO state again for its member states the function of the International Pharmacopoeia, (2) requesting that WHO investigate the program of the subcommittee on international nonproprietary names to determine if considerations by the subcommittee are in accord with the terms of reference of the WHO constitution, and (3) suggesting to WHO that a set of rules be prepared for the guidance of the Expert Committee on Names by which all interested parties have an opportunity to review the proposed names and offer suggestions and comments and at the same time protect national pharmacopoeias.

Medical Education

The general assembly passed an unanimous vote of appreciation to all those who had contributed to the outstanding success of the conference on medical education.

Social Security

Dr. Knutson, chairman of the Social Security Committee, reported that the subject of remuneration of physicians had been considered and recommended that the general assembly adopt the following declaration:

"The Seventh General Assembly of The World Medical Association having taken cognizance of the Report of the Committee on Social Security and having taken the position that various fair methods of remuneration of doctors in the Social Security structure can be accepted by the profession, declares that the profession ought to reject categorically, any method of remuneration which could have a harmful influence on the quality of medical care or would not confirm to the principles of Medical Ethics, and reaffirms its action of 1948 relative to the Twelve Principles and recommendations pertaining thereto, concerning medical care under Social Security, and instructs the Council to publicize this resolution wherever advisable."

Dr. F. A. Sondervorst of Belgium informed the delegates of the state of tension now existing in his country between the government, the social security group, and the physicians. The recent decree is not in conformity with the recommendations of the medical profession and allows the Friendly Aid Societies in case of nonpriority to release the physician and provides that the physician be subject to nonprofessional legal jurisdiction. Hence the profession refuses to cooperate. The problem of the deficit of the budget continues. No political party wishes to assume the responsibility of reducing benefits to those who are insured in order to balance the budget.

Dr. K. E. U. Jaameri of Finland told the delegates that to date the medical profession in his country had little contact with the social security organizations but now their time, too, had arrived. An entirely new system has been submitted to the medical profession by the Friendly Aid Group. The patient would see a nurse who would be trained in social medicine. This would reduce the cost to the patient of seeing a physician. The medical profession does not approve this system, as it realizes that minor ailments at times have serious consequences.

Dr. R. Schaffer of South Africa noted that society cannot take overdoses of social security. With the present widespread overly enthusiastic attitude toward social security, the medical profession is gradually developing an acute social insecurity. The medical profession should study economics. With an ever-increasing supply of doctors being graduated from medical schools and wishing to make a living, social security organizations recognize their advantage and exploit not only the present supply of physicians but also that of the future. The time has come for the medical profession to cease encouraging more social security and insist that the public pay for the professional services it receives. South Africa has a comparatively comprehensive social security plan, but the medical profession is represented directly on every government body concerned with it.

In Switzerland, Dr. Leon Sochechaye reported, the system of remuneration is on a fee-for-service basis and is approved by the medical profession. A new law has been drafted. It would provide better medical care for those without financial means and would be on a compulsory basis. The medical profession will cooperate if free practice of the profession and medical secrecy are guaranteed. The draft of this plan has been submitted to parliament. It may not be accepted or it may be modified to such an extent that the medical profession could not accept it.

Dr. V. A. Fenger of Denmark discussed the advisability of the medical profession entering the political field. He stated that the Danish Medical Association had decided it would be a mistake. He told the delegates that his government was endeavoring to unify its social security system. This would mean that another 20% of the population would be brought into the sickness fund. Although former legislation on social security has been accepted as a necessity, the medical profession is not convinced that this additional 20% is necessary and the profession will cooperate only under certain conditions.

Dr. T. R. Hill of Great Britain suggested that the discussion had placed too great an emphasis on dangers to the profession and overlooked the dedication of the profession to serve humanity. He introduced an addendum to the report of the committee instructing the council to undertake a study to provide a plan whereby the poor of all nations would be assured of medical care without lowering the standards of medical care and that would not result in social security developments detrimental to medicine.

Prof. Dr. A. Spinelli of Italy told the delegates that the profession in his country was opposed to the nationalization of medicine. The only acceptable system of remuneration is direct payment of the physician by the patient.

The Royal Netherlands Medical Association had recently discussed the advisability of national and international associations becoming active in politics, Dr. F. Wibaut reported. It was agreed that associations not only had the right but must accept the duty to support or oppose certain measures from a medical viewpoint. In opposing political groups, however, the association's arguments must not be political but must be based on the welfare of the patient and the profession.

Dr. Cibrie reported that the medical profession in France has reached an agreement for the modification of the current social security law.

In speaking for the United States, Dr. Gunnar Gundersen said that many in his country believed that social security had gone too far and too fast. A proposal is now before Congress to extend the social security plan to an additional 10 million persons. The physicians and lawyers of the United States have no desire to be included in the plan, preferring to make their own provisions in the traditional way. Money in trust funds for old age should be exempt from taxation. Social security leads only to bureaucracy. The budget in the United States is not balanced, and the deficit would be increased with increased social security. The people of the United States approve of aiding war-ravaged countries, but they object to subsidizing socialism in Europe. The medical profession in the United States is still free. Ninety million people are covered by voluntary health insurance and the number is increasing. The medical profession believes that the voluntary system is the only system that will provide the highest type of medical care.

Further Business

The general assembly reaffirmed the selection of Rome, Italy, for the eighth general assembly in 1954, and Prof. Dr. A. Spinelli of Italy was unanimously designated president-elect for the year 1953-1954. Dr. Otto Leuch of Switzerland was unanimously elected treasurer for a three year term. The following members were elected to the council for the ensuing three years: Dr. Gunnar Gundersen (U. S. A.), Dr. A. Mantellos (Greece), Dr. S. C. Sen (India), and Dr. Lorenzo Garcia-Tornel (Spain).

SIXTH A. M. A. MEDICAL PUBLIC RELATIONS CONFERENCE

More than 350 physicians and medical society lay personnel focused their attention on public relations policies, problems, and methods at the Sixth Annual Medical Public Relations Conference held on Nov. 30 in the Jefferson Hotel just prior to the opening of the A. M. A. Clinical Meeting in St. Louis. Delivering the keynote address, Dr. Walter B. Martin of Norfolk, Va., President-Elect of the American Medical Association, pointed out that health is no longer entirely an individual matter between a physician and a patient. Problems that arise, he said, require careful coordination of all health activities for the total benefit of the public. Dr. Martin described public relations "not as a means of putting ourselves in a better light before the public but as a way by which we can learn better how to serve the public and to constantly enhance the quantity and quality of medical care and its availability. If our judgment is given honestly and fearlessly for the common good, it should and will carry weight," he declared. "If it is founded on ignorance or colored by self-interest, it will be disregarded."

Dr. Franklin L. Shively Jr. of Dayton, Ohio, vice-president of the Montgomery County Medical Society, presided over the opening session, which included an address of welcome by Dr. George F. Lull of Chicago, Secretary and General Manager of the A. M. A. Dr. Lull urged medical public relations persons in the field to develop their own ideas and pass them on to the A. M. A. Public Relations Department for relay to other state and county societies.

A morning symposium, "Making a PR Program Work," included Dr. Josephine Renshaw of Washington, D. C., public relations chairman for the Medical Society of the District of Columbia; Dr. Clyde W. Miller of Wichita, Kan., public relations chairman for the Kansas State Medical Society; Dr. David Welton of Charlotte, N. C., president of the Mecklenburg County Medical Society, and Dr. Lewis A. Alesen of Los Angeles, past president of the California Medical Association.

Dr. Renshaw, in discussing how to improve the attitude of the public toward the medical profession, emphasized the need of reaching school children "as doctors helping with school health programs and as parents working through parent-teacher associations." Describing a "public opinion poll" taken in the form of a series of dinner meetings with representatives of some 20 groups, such as labor, industry, education, and religion, Dr. Miller said its value lay in the fact that "we asked our neighbors to help us with a problem." While not a true public opinion poll, he added, the project has given "a depth of knowledge that the broadest opinion poll can never approach." Dr. Welton reported that his society had set up a special study committee to learn the facts about medical service and personnel in the community, obtain local public opinion on the subject, and develop recommendations to correct deficiencies. The public opinion poll, he said, "did convince the public that we were willing to have an unbiased evaluation and opened the door to a positive program of improvement."

The full development of emergency call systems, public service committees, and programs for medical care regardless of ability to pay were the three main objectives outlined by Dr. Alesen. He also urged punishment of physicians for gross violations of ethical concepts, and he emphasized the role of women's auxiliaries in public relations work.

Speaking at the conference luncheon session, Dr. Leo H. Bartemeier of Detroit, Chairman of the A. M. A. Committee on Mental Health, urged physicians to try to understand the feelings of anxiety, fear, and insecurity that motivate some patients. "The majority of sick people hope that their physician, in addition to his medical knowledge and skill, will be sufficiently interested in them so that they may have his complete attention," Dr. Bartemeier said. "They want to sense that he cares how they feel and that he will relieve their suffering as quickly as possible." He pointed out that many adult patients expect their physicians to have the same attitude and understanding as their parents once did. Repeated failure to understand patients in matters that are serious to them tends to motivate them away from medicine, he added.

Industry and agriculture were represented in an afternoon discussion of "Selling Our Economic System: How Others Do It," presided over by Dr. Arthur Neilson, chairman of the St. Louis Medical Society Public Relations Committee. Taking part were Mr. Howard W. Bennett of New York, manager of economic education in the plant community relations division of the General Electric Company, and Mr. Roger Fleming of Washington, D. C., secretary-treasurer of the American Farm Bureau Federation. Describing his company's economic education program for employees, Mr. Bennett reported: "one thing we have learned is that you must take a positive approach and you must be there with the facts." He suggested that the medical profession might "ring a bell better" by talking more about the health of the people and less about the accomplishments of medicine and medical organizations. "The American system is different from any other system in the world the same as American medical societies are different from any other medical societies around the globe," Mr. Bennett declared. "To protect this system, all of us should be on the lookout for proposed changes that might remove an essential part of the system."

Mr. Fleming, observing that efforts have been made to smear medicine because of an alleged negative attitude, pointed out that "seven of the ten commandments start out 'Thou shalt not.' I hope that you will survey the total field and add your contribution as American citizens to dealing with the problem of centralization, of wholesale political interference in the economic field wherever you find it," he said. "If you don't fight on the side of liberty, you fight against it."

Mr. Rollen Waterson of Oakland, Calif., executive secretary of the Alameda-Contra Costa County Medical Association, presided over a symposium "Mending Our PR Fences." He told the conference: "If we are to have good public relations with people, we have to back up what we say, be what we pretend to be and produce a uniformly good product."

The first panel speaker, Dr. Edwin Crosby of Chicago, director of the Joint Commission on Accreditation of Hospitals, urged the audience "to explain that the Joint Commission is one of the greatest bulwarks against socialism that medicine and the hospital professions have ever constructed. It assures the public that our primary concern is for the patient and the care which he receives."

Dr. Durward Blakey of Clarksdale, Miss., secretary of the Clarksdale and Six Counties Medical Society, reported on the success of his hospital's medical audit program. He said: "There is no means whereby a hospital can render the best possible medical care unless the medical staff has adopted and strictly enforced a plan whereby every doctor's ability is constantly checked and his privileges assigned accordingly. A medical audit system represents an ideal."

Speaking on "A Mediation Committee with Teeth," Dr. David W. McCarty of Longmont, Colo., chairman of the board of supervisors of the Colorado State Medical Society, declared that any committee on professional conduct should have the approval and respect of members of the state society and the confidence of the public. He added that it also should be empowered to carry out complete investigations, to prosecute serious offenses before a judicial body, and to conduct educational programs. Good publicity is another essential for real effectiveness, Dr. McCarty said.

Dr. Henry V. Weinert of Passaic, N. J., chairman of the tissue committee at St. Mary's Hospital, advised that any hospital planning a tissue committee should first set up basic legislation to combat such irregularities as ghost surgery and unnecessary surgery. He also said: "Properly encouraged, physicians will permit self-examination and correction, which is excellent prophylactic therapy for future adverse publicity and another step to good public relations."

Winding up the Conference program, Mr. Leo E. Brown, Director of Public Relations for the American Medical Association, emphasized the need to "stimulate an awareness on the part of the individual physician of just what public relations means to the medical profession and to him as an individual." He concluded by saying: "only the individual physician can heal the medical profession's public relations wounds."

ANNUAL CONVENTION OF INTERNATIONAL ASSOCIATION OF INDUSTRIAL ACCIDENT BOARDS AND COMMISSIONS

The 39th Annual Convention of the International Association of Industrial Accident Boards and Commissions was held at Coronado, Calif., Oct. 4-8, 1953. The members of this group are the workmen's compensation administrators from the states, territories, and Canadian provinces. Associate memberships are held by insurance carriers, medical organizations, self-insurers, and others interested in the field of workmen's compensation.

As has been the custom in recent years, a large part of the program was devoted to the medical aspects of workmen's compensation. One session dealt with the perennial problem of disabilities of the back, including herniated intervertebral disks, another with recent developments in loss of hearing claims. After a demonstration on fitting, training, and rehabilitation of upper extremity prosthetic cases and a panel discussion on rehabilitation centers, a new film on the Rehabilitation Center of Puerto Rico was shown.

The report of the rehabilitation committee reiterated the need for adoption of a working agreement between the compensation authorities of the various jurisdictions and the vocational rehabilitation divisions of the states or territories. The committee invited Georgia, Colorado, Illinois, and Hawaii to experiment with the working agreement, approved at the last convention of the association and to report the results of their efforts to the committee prior to the next convention at Quebec in 1954.

The report of the Medical Committee was a very general and limited discussion of permanent disability rating and evaluation methods throughout the United States and Canada. After a brief summary of past efforts by the association to discuss this vital problem, the report stated: "Thirty years have since elapsed, bringing wars, periods of depression and economic change. Even since 1940 there has been an industrial and economic revolution with marked advances in labour relations. Despite this period of progress in allied fields there has been little, if any, change in workmen's compensation laws and administrations, particularly in the field of permanent disability evaluation." In describing existing conditions, the report stated: "We believe it is obvious to any experienced compensation administrator that the wheels of progress have become mired and bogged down in an entangled mesh of legalistic procrastination and red tape. The cause of this dilemma is not hard to find. Critical analysis of some of our laws shows there is still an underlying tendency to buy off the injured workman—to place strict emphasis on monetary values for certain injuries, forgetting all too often that we are dealing with complex human individuals rather than machines. Until and unless there is a change in our basic thinking and philosophy, evaluation for permanent disability will still remain the jumbled, confused chaotic mess it is today."

In conclusion, the committee outlined a few generalities in respect to disability rating and evaluation for the consideration of the Association.

"1. Recognition that compensation benefits and payments during the acute phase of illness following the accident or occupational disease should continue until the condition becomes static, or until the claimant is able to resume full or modified employment.

Explanation: Permanent partial, or permanent total disability means exactly what the word 'permanent' implies; namely, that the condition will be more or less static and unchangeable during the lifetime of the claimant. Your Committee feels that both the purpose and the principle of compensation benefits paid during the acute or healing period are entirely different in concept and meaning to the awards paid for permanent disability.

"2. Recognition that maximum medical restoration of function along with adequate readjustment from a physical, sociological and mental standpoint is a necessary prerequisite of disability rating. That such maximum medical restoration should be supervised and controlled by the various compensation agencies.

Explanation: Hitherto in a great many jurisdictions emphasis has been placed on early settlement. The compelling attitude has been to get rid of the case and close the books. Overemphasis on speed of settlement before the claimant is completely recovered from his physical and mental injury is detrimental to the claimant. Such lump sum settlements, we know, are greatly sought after by both the insurer and the insured. All such awards are later found to be completely inequitable and based on inadequate medical testimony. Your Committee makes a strong plea for a complete shift of emphasis and priority. We feel that complete physical restoration with advanced medical care, coupled with rehabilitation and readjustment, is much more valuable and important than hasty monetary consideration.

"3. Recognition that the process of rehabilitation in its broadest aspect is both desirous and a necessary forerunner of successful permanent disability rating.

Explanation: Rehabilitation is the end point of the compensation processes regardless of whether we are working under a so-called forensic or clinical system. Successful permanent disability rating, particularly in unscheduled or controversial scheduled cases, depends to a large extent on how successful we have been in our primary medical care, physical rehabilitation, work assessment, job placement efforts, and vocational retraining.

"4. Recognition that permanent disability within jurisdictional limits is a clinical rather than a legal problem and that in so far as practical all ratings should be made by experienced, trained personnel employed by the commission, including at least one or two physicians specializing in this work.

Explanation: Disability evaluation is a medical specialty requiring a high degree of skill, training and experience. Human beings are complex mechanisms with many factors influencing their well-being, attitudes and behavior. They differ so widely in their reactions and adaptability that each must necessarily become an individual problem. We believe that the responsibility for the injured worker's future rests with the commission and this responsibility should not be delegated.

"5. Recognition that in moderately severe and severe disabilities pensions for permanent disability should be calculated and awarded on a lifetime basis.

Explanation: More and more jurisdictions throughout the United States are paying sizable awards in weekly installments up to five and ten years' duration. Your Committee feels that this is a step in the right direction, but that it does not go far enough. The worker still has his disability after this period and he has reached an age when his earning capacity is reduced. Thus his payments stop at the very time when they are most needed. Large lump sum settlements given without restriction would appear to have practically no place in compensation administration.

"6. Recognition that any rating schedule should be used only as a guide in disability evaluation and that procedural right should be vested in administrative bodies to vary this schedule within certain limits.

Explanation: The rating schedule should be our servant and not our master. (No two disabilities are alike in their effect upon individuals.) In dealing with permanent disability awards we are dealing with the effect of the injury, not the injury itself. We are primarily concerned with inequity in disability rating and feel that jurisdictional rights, within certain limits, should be given to compensation administrative bodies so that they might exercise to a limited degree discretionary powers.

"7. Recognition that disability awards and pensions should be subject to review during the lifetime of the claimant, provided medical evidence is produced to show the condition for which the rating was made has changed.

Explanation: Medicine is not an exact science. Disability evaluation calls for exacting end result studies and prognosis—mistakes are more common in the field of prognosis than any other branch of medicine. Without a procedure of review in doubtful cases, injustices and inequities are bound to arise.

"8. Recognition that our present system of compensating for permanent disabilities has not kept pace with advances in modern industrial and sociological thinking.

Explanation: Realization of existing inadequacies is a good approach to the need for a change in our basic concept and philosophy of permanent disability ratings.

"9. Recognition that at the present time uniformity and standardization of permanent disabilities throughout the various jurisdictions are neither feasible, practical nor desirable, but that a shift of emphasis to equality of medical treatment with full rehabilitation measures would narrow the gap between awards made by different jurisdictions under our existing laws.

"10. Recognition that there is a definite need for a complete scientific study of all aspects of disability ratings on both a state and national level. That this study is of such importance both economically and socially it can be undertaken only by a full-time committee adequately financed."

Because of the growing importance of medical problems in workmen's compensation administration, a meeting is planned between the medical committee of the association and the Council on Industrial Health of the American Medical Association to allow for joint discussion of these problems.

MEDICAL NEWS

CALIFORNIA

Yandell Medal to Dr. Holman.—On Nov. 11, 1953, the Louisville Surgical Society awarded the first annual David W. Yandell medal to Dr. Emile Holman, professor of surgery, Stanford University School of Medicine, San Francisco. The annual award and lectureship were instituted to honor the memory of Dr. David W. Yandell, founder of the society, who was professor of surgery in the University of Louisville School of Medicine from 1869 to 1898. Dr. Holman conducted surgical conferences at the university before his presentation of the annual Yandell lecture.

Course on Radioactive Isotopes.—The University of Southern California Medical Extension Education, Los Angeles, will offer a course, "The Essential Physics of Therapeutic Radiology and the Clinical Applications of Radioactive Isotopes," on Monday evenings, 8 to 10 p. m., from March 8 to May 24, at the Los Angeles County Hospital and the Cedars of Lebanon Hospital. Inquiries should be directed to Dr. Robert S. Cleland, Assistant Director, Medical Extension Education, University of Southern California School of Medicine, 2025 Zonal Ave., Los Angeles 33 (telephone CApitol 5-1511).

COLORADO

Society News.—At a recent meeting of the Colorado Radiological Society the following officers were elected: Dr. William S. Curtis, Denver, president; Dr. Raymond R. Lanier, Denver, vice-president; Dr. Parker Allen, Denver, secretary; and Dr. Thomas J. Kennedy, Denver, treasurer.

Vector Control Program.—A two year demonstration program in insect and rodent control is being conducted by the Colorado State Health Department, the U. S. Public Health Service, and the Pueblo City-County Health Department in the county of Pueblo. The purpose is to show how insect and rodent control can be incorporated into the over-all environmental sanitation activities of a local health unit as an effective means of raising standards of community health. The attention of the community has been focused on four major problem areas in insect and rodent control: (1) improvement in methods of storage, collection, and disposal of refuse; (2) improvements in methods of handling industrial wastes; (3) elimination of outdoor privies and promotion of, or actual extension of sewers; and (4) improvements in the cleanliness of, or, where indicated, elimination of animal and poultry shelters. To arouse public interest in the program, the City-County Health Department has sponsored a "Cleaner Pueblo" campaign, a demonstration of the sanitary landfill method of garbage and trash disposal, and an educational program among civic groups and service clubs. Future plans include an environmental sanitation survey in the city and surrounding fringe areas.

CONNECTICUT

Hospital News.—Dr. Wilmar M. Allen, director of the Hartford Hospital for 17 years, has retired and will be succeeded by Dr. T. Stewart Hamilton, director, Newton-Wellesley Hospital, Newton Lower Falls, Mass., and assistant director of the Massachusetts General Hospital, Boston.

Personal.—Gov. John D. Lodge has reappointed Dr. John H. Bumstead, New Haven, for a five year term to the Connecticut Medical Examining Board after nomination by the Connecticut State Medical Society.——Dr. Harold S. Barrett, chief, medical services section, Connecticut State Department of Health has been appointed deputy commissioner to succeed Dr. Albert S. Gray, who retired July 1. Dr. Barrett served as an officer in the U. S. Public Health Service from 1944 to 1950.

Tommy Memorial Fund.—Representatives of the New Britain firemen, who recently set up the Tommy Memorial Fund for research on leukemia, have presented a check for $8,000 to the Yale University School of Medicine in memory of Tommy Mozdzierz, who died in January, 1953, at the age of 4. The firemen plan to continue their fund-raising efforts and are calling on fire departments in other communities. The contributions, which have come from hundreds of individuals and organizations, include some from the Canal Zone, Alaska, and soldiers in Korea. The largest sum, $1,341.61, was raised at a benefit dinner by the Bristol firemen.

DISTRICT OF COLUMBIA

Variety Club Receives First Nichols Award.—The Variety Club of Washington has been named by the Medical Society of the District of Columbia as the first recipient of the John Benjamin Nichols award "for contributions in the health field and distinguished service to the people of the District of Columbia." The award, named in honor of Dr. John Benjamin Nichols, 86, is given to the lay person or organization, or both, judged to have made outstanding contributions to the betterment of health of the people of the District of Columbia. It consists of a certificate and a bronze plaque. The Variety Club's many contributions to the improvement of health facilities in the District of Columbia have included a pledge of $115,800 to Children's Hospital for an outpatient clinic that can handle 92,000 patient visits a year; a new ambulance for the Central Dispensary and Emergency Hospital; $2,500 to Episcopal Eye, Ear and Throat Hospital for a medical social service worker for the glaucoma clinic; $1,500 to the community chest; $2,000 to the Metropolitan Police Boys' Club; $1,500 for nurses' quarters at the Hebrew Home for Aged; and first-run movies for the Florence Crittenton Home, District Training School, Freedmen's Hospital, Glenn Dale Sanatorium, Industrial Home School of Blue Plains, Masonic Home, and Junior Village (D. C. Home for Children).

GEORGIA

Georgia Hospitals Built with Hill-Burton Aid.—Soon after the Hill-Burton Bill became a federal law on Aug. 13, 1946, the state of Georgia made a detailed survey of its hospital situation and estimated its future hospital needs. A master state hospital plan was formulated and approved by the state board of health and presented to the citizens of Georgia in a widely announced public hearing. In 1949 the general assembly passed an act providing for state grants-in-aid to further implement the hospital program, and Georgia went to work to relieve the acute shortage of hospital facilities that had developed during the depression years and during World War II. Thus, for several years the hospital construction program in Georgia has been based on an inventory of its existing facilities, the areas of greatest needs, and the resources available in these areas.

A pamphlet published by the Georgia Department of Public Health gives details of the projects completed and under construction and approved new projects as of Jan. 1, 1953. Pictures of a few of these projects appear on the opposite page. As of that date, 132 projects, including hospitals, public health centers, nurses' homes, and laboratories, were either completed, under construction, or approved, and these will add 3,243 hospital beds at a total estimated cost of $53,978,006.27. Since this pamphlet was published, additional new hospitals have been completed at Ashburn, Blackshear, Calhoun, Cordele, Douglas, Fort Oglethorpe, Fort Valley, Ocilla, and Soperton. The appropriations through the 1952-1953 fiscal year included $19,468,945 of federal funds and $11,473,000 of state funds paid or earmarked for projects completed, under construction, or approved. The local sponsor's share brought the total cost to about 54 million dollars. The pamphlet states that the construction program has created an urgent need in Georgia for more and better trained hospital personnel and that the various

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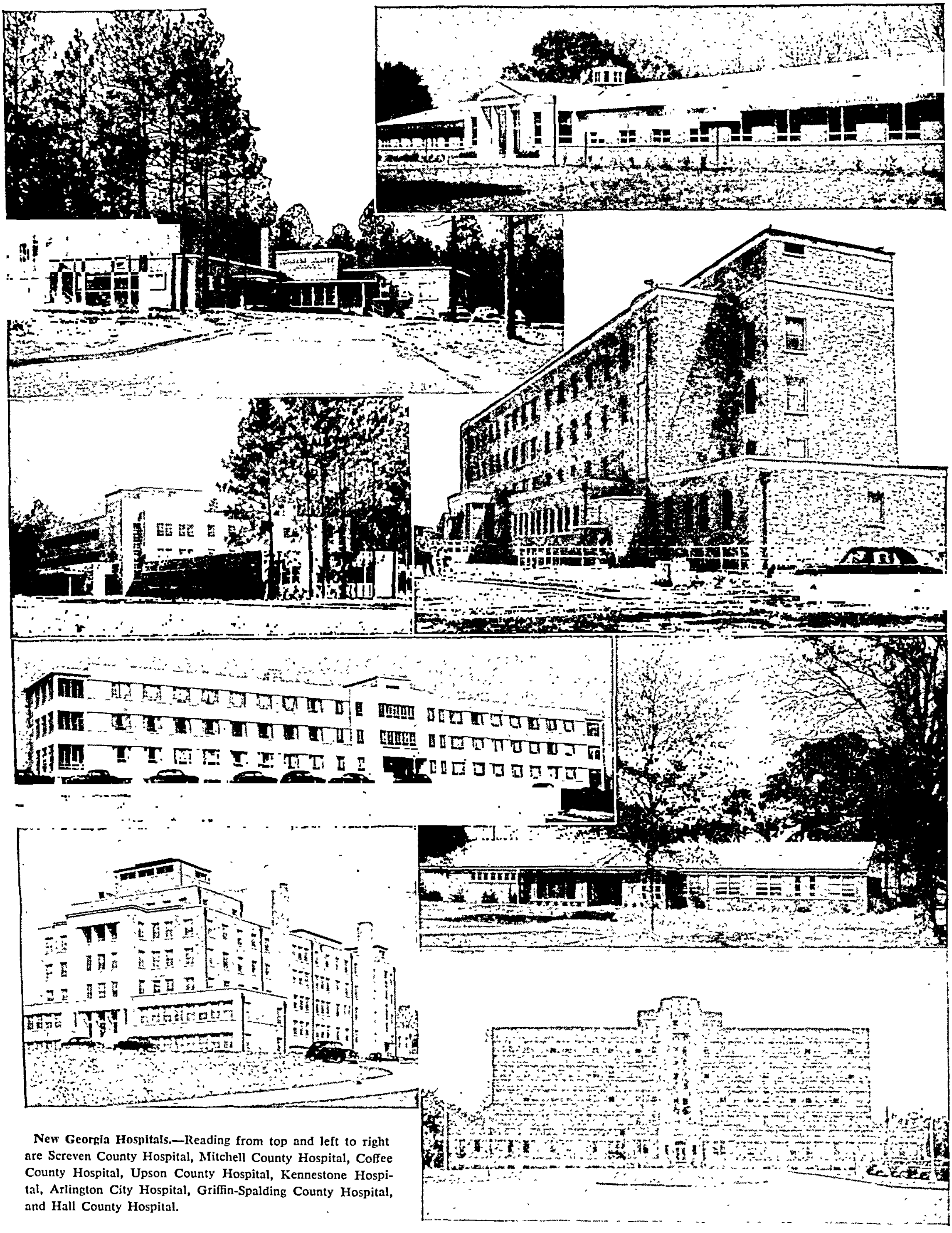
Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

communities will need to share with the hospitals the responsibility for the training of more dietitians, technicians, nurses, nurses' aids, medical record librarians, and administrators, if the health needs of the people are to be properly met. It is said, there is still much to be done, in replacing obsolete general hospital facilities in the larger medical centers and in the construction of facilities for patients with chronic illness and of special diagnostic and rehabilitation facilities. As of the foregoing date, only 59% of the state's needs had been met for hospital general service.



New Georgia Hospitals.—Reading from top and left to right are Screven County Hospital, Mitchell County Hospital, Coffee County Hospital, Upson County Hospital, Kennestone Hospital, Arlington City Hospital, Griffin-Spalding County Hospital, and Hall County Hospital.

ILLINOIS

Radioisotope Research on Gastrointestinal Diseases.—Drs. Karl A. Meyer and Donald D. Kozoll have been awarded a grant-in-aid of $12,960 for radioisotope research in gastrointestinal diseases by the Dr. Jerome D. Solomon Memorial Research Foundation. The work will be carried on in the Children's Building of Cook County Hospital, Chicago, where Drs. Meyer and Kozoll are the attending and associate attending physicians, respectively. Drs. Robert James Freeark and Robert Jay Baker have been assigned to the project as full-time fellows.

Chicago

Meeting on Antihypertensive Drugs.—The Douglas Park Branch of the Chicago Medical Society in cooperation with the Chicago Heart Association will meet Jan. 19 at 9 p. m. in MacNeal Memorial Hospital, 3249 S. Oak Park Ave., Berwyn, to discuss "Use of Newer Antihypertensive Drugs." The speaker, Dr. George E. Wakerlin, professor of physiology, University of Illinois College of Medicine, will serve as moderator for a round table discussion in which Drs. Carl F. Baumeister, Berwyn, Ill., Benjamin Pearlman, and Francis L. Foran will participate.

MARYLAND

Society News.—The Baltimore City Medical Society offers the following lectures at Osler Hall, 1211 Cathedral St., Jan. 15, 8:30 p. m.:

Regional Enteritis, Burrill B. Crohn, New York (by invitation).
Chronic Idiopathic Ulcerative Colitis—Problems in Etiology and Management, Thomas E. Machella, Philadelphia (by invitation).

MASSACHUSETTS

Joint Medical-Dental Meeting.—The Greater Boston Medical Society and the Greater Boston Dental Society will hold their annual joint meeting Jan. 20 at 8:30 p. m. at the Boston Club, 46 Beacon St., Boston. Dr. Hans Selye, director, Institute of Experimental Medicine and Surgery, University of Montreal, Canada, will read the paper "Stress and Disease," which will be discussed by Dr. Gustave J. Dammin, Harvard Medical School, Boston, and Irving Glickman, D.D.S., Tufts College Dental School, Boston. All interested persons are invited.

MICHIGAN

Society News.—The Michigan Allergy Society has elected Dr. Donald S. Smith, Pontiac, president; Dr. Joseph H. Shaffer, Detroit, vice-president; and Dr. Sidney Friedlaender, Detroit, secretary. The next meeting will be held in Detroit Jan. 20, at which time Elvin A. Kabat, Ph.D., professor of microbiology, Columbia University College of Physicians and Surgeons, New York, will discuss "Quantitative Immunochemistry in the Study of Allergic Reactions."

NEW YORK

County Society Meeting on Cancer.—The Medical Society of the County of Kings will present the following program at its stated meeting Jan. 19, in MacNaughton Auditorium, Brooklyn:

Joseph H. Burchenal, New York, Chemotherapy and Hormonal Treatment of Cancer.
Ernest L. Wynder, New York, Prophylactic Treatment of Cancer.
James J. Nickson, New York, Management of Cancer with Radiation Therapy and Radioactive Isotopes.

Hospital News.—Manhattan State Hospital, New York, offers Friday afternoon lectures (1:30 p. m.) in the Keener Building on Ward's Island. The courses started Jan. 8 with the first of a series of 10 lectures on basic concepts of psychoanalytics by Dr. Hyman L. Rachlin. From March 19 to May 28 Dr. Sarah Y. Breitbart will have as her topic for the Friday lectures "Therapeutic Implications of Horney's Theory of Neurosis." Programs may be had on request to Dr. John H. Travis, director.

Memorial to Dr. Anna Brown.—As a memorial to Dr. C. Anna J. Brown, a practicing Seneca Falls physician for half a century previous to her death in 1952, a new x-ray room has been opened in the Seneca Falls Hospital, which she established in 1910. Several organizations of the village contributed to the memorial fund for the purchase of the x-ray equipment. The door will bear a bronze tablet inscribed: "This x-ray equipment is a community gift to the Seneca Falls Hospital in living memory of the devoted and unselfish services of Dr. C. Anna J. Brown to the people of this village."

New York City

Harvey Lecture.—Rollin D. Hotchkiss, Ph.D., associate member, the Rockefeller Institute for Medical Research, will deliver the fifth Harvey lecture of the 1953-1954 series at the New York Academy of Medicine, Jan. 21. He will discuss "Genetic Chemistry of the Pneumococcal Transformations."

Fourth Pollitzer Lecture.—The Department of Dermatology and Syphilology of the Post-Graduate Medical School of the New York University-Bellevue Medical Center announces that the fourth Sigmund Pollitzer lecture will be given by Dr. Stephen Rothman, professor of dermatology and syphilology, University of Chicago School of Medicine, Jan. 21 at 4 p. m., in the main lecture hall of the College of Medicine, 477 First Ave. His subject will be "Some Physiologic and Endocrinologic Aspects of the Epidermis and Skin Appendages."

Public Health Workshop Conference.—A workshop on "Occupational Oral Health in General Dentistry and Public Health," sponsored by the First District Dental Society of New York, with the collaboration of the Post-Graduate Medical School, Institute of Industrial Medicine, New York University, will be held at the Hotel Statler, Jan. 22. Physicians participating in the morning panel "Oral Health Standards for the Employee on the Job" include Dr. Anthony J. Lanza, Dr. Robert C. Page, and Dr. Morris A. Brand. The afternoon panel will review problems concerned with the scope of dental services in occupational health programs. Members of the health professions are invited. Admission is free. For registration forms write to Public Health Workshop, First District Dental Society, Hotel Statler, New York 1.

OHIO

Dr. Katz' Lecture on Atherosclerosis.—At a joint meeting of the Academy of Medicine of Cincinnati and the Heart Council, Jan. 19, Dr. Louis N. Katz, director, cardiovascular department, Michael Reese Hospital, Chicago, will discuss "The Implication of Recent Studies in Atherosclerosis."

Fellowships in Industrial Medicine.—The Institute of Industrial Health of the University of Cincinnati will accept applications for a limited number of fellowships in industrial medicine. Any graduate of a class A medical school who has completed at least two years of training in a hospital accredited by the American Medical Association may apply. Service in the Armed Forces or private practice may be substituted for one year of training. The course consists of two years of intensive training in industrial medicine, followed by one year of practical experience under adequate supervision in industry. The degree of doctor of industrial medicine will be awarded. During the first two years the stipends for the fellowship vary, in accordance with the marital status of the fellow: $2,100-$2,700 in the first year and $2,400-$3,000 in the second year. In the third year the candidate will be compensated for his service by the industry in which he is completing his training. A one year course, without stipend, is also offered. Requests for information should be addressed to the Institute of Industrial Health, College of Medicine, Eden and Bethesda, Cincinnati 19.

PENNSYLVANIA

Lecture on Carcinoma.—On Jan. 19 the Allegheny County Medical Society, 225 Jenkins Bldg., Pittsburgh, will present Dr. Cornelius P. Rhoads of the Memorial Center for Cancer and Allied Diseases in New York, who will speak on cancer.

Examination for Public Health Positions.—The Pennsylvania Department of Health announces an examination to be held Feb. 20 for top level administrative positions in the field of public health. Examinations will be held in Harrisburg, Philadelphia, and Pittsburgh for the following positions, with salaries ranging from $5,058 to $14,520: director, office of local health services; director, preventive services; director, environmental health services; director, division of alcoholic studies and rehabilitation; medical coordinator (civil defense); director, bureau of public health education; public health education consultant; pediatrician; and assistant director of the bureau of public health nursing. Application forms, which must be submitted by Jan. 29, may be obtained from the State Civil Service Commission, Box 569, Harrisburg.

Philadelphia

Meeting on Rehabilitation.—Dr. G. Morris Piersol will serve as moderator for a panel discussion on teamwork in rehabilitation, a feature of the meeting of the Pennsylvania Academy of Physical Medicine and Rehabilitation Jan. 21 in Medical Alumni Hall at the Hospital of the University of Pennsylvania. Other topics to be presented include cineplasty operation and prosthesis, comparative effectiveness of shortwave and microwave diathermy, use of a handy-hook in the chronic paralytic hand, and interpretation of electroencephalograms.

TENNESSEE

Jackson Clinic's Annual Seminar.—The Jackson Clinic in Jackson will hold its first annual seminar Jan. 17. Physicians from the surrounding area are invited to attend the meetings and luncheon. Speakers will be Drs. Howard K. Gray and James C. Cain, Mayo Clinic, Rochester, Minn. "Diseases of the Liver and Biliary Tract" will be discussed at 10 a. m. and "Diseases of the Upper Intestinal Tract" at 2 p. m.

WEST VIRGINIA

Premature Institute.—The next Premature Institute, sponsored by the State Department of Health, will be held Jan. 18-29 at the Demonstration Premature Center, Hebert J. Thomas Memorial Hospital, South Charleston. Information concerning the courses to be offered may be obtained from Mrs. Laurence C. Fisher, Director, Bureau of Public Health Nursing, State Department of Health, Charleston.

WASHINGTON

Society News.—At the regular meeting of the Walla Walla Valley Medical Society Dec. 10, 1953, the following officers were elected: Dr. Peter T. Brooks, president; Dr. Merrill Smeltzer, vice-president; and Dr. Robert C. Beck, secretary-treasurer.

Refresher Course in Heart Disease.—Drs. A. Dean Johnson and John L. Bakke, Seattle, will be speakers at the Jan. 20 meeting of the Whitman County Medical Society, when another in the series of refresher courses in heart disease will be presented under the sponsorship of the Washington State Heart Association in cooperation with the state health department.

GENERAL

Pediatric Cancer Fellowships.—Fellowships for training in clinical investigation in the field of cancer in children, including chemotherapy, have been created at the Children's Cancer Research Foundation. Stipends vary from $2,400 to $5,000, depending on training. Application blanks may be secured from the office of Dr. Sidney Farber, Scientific Director, Children's Cancer Research Foundation, Boston.

Conference on Trichinosis.—The second National Conference on Trichinosis will be held in the auditorium of the American Medical Association March 1. The purpose of the conference is to discuss methods of education, problems of human and animal health, and research in relation to control of the disease. Information can be secured from Dr. Sylvester E. Gould, Chairman, Wayne County General Hospital, Eloise, Mich.

New Record in United States Births.—According to the Metropolitan Life Insurance Company, a record number of babies (3,950,000) was born in the United States in 1953. It was the seventh year in succession in which the number of births exceeded 3½ million. The year's total was about 2% higher than for the preceding year and more than 50% higher than in 1940. The 1953 birth rate was approximately 25 per 1,000 population. At the same time, the statisticians point out, "Infant mortality during the year declined to an unprecedented low, estimated at 28 per 1,000 live births, which is slightly below the previous minimum recorded the year before. The 1953 infant mortality rate represented a decline of 30% from that of 10 years ago, and of more than 50% from that of 20 years ago."

Gold Keys for Rehabilitation Work.—Dr. Howard A. Rusk, chairman of the Gold Key Awards committee, American Congress of Physical Medicine and Rehabilitation, announces that the closing date for nominations for 1954 Gold Key awards is March 15. Congress members wishing to nominate a person whose accomplishments in the field of physical medicine and rehabilitation have been outstanding and have resulted in raising the discipline of the specialty to a higher standard can forward their nominations, together with pertinent data, to Dr. Rusk, Institute of Physical Medicine and Rehabilitation, 400 East 34th St., New York 16, or to other members of the committee: Dr. Arthur C. Jones, 419 Mayer Building, Portland 5, Ore.; Dr. Alvin B. C. Knudson, chief, Physical Medicine and Rehabilitation, Veterans Administration, Department of Medicine and Surgery, Washington 25, D. C.; Dr. Gordon M. Martin, Section on Physical Medicine and Rehabilitation, Mayo Clinic, Rochester, Minn., or Dr. Donald L. Rose, Department of Physical Medicine, University of Kansas School of Medicine, 39th and Rainbow Blvd., Kansas City 3, Kan.

Annual Meeting of Orthopedic Surgeons.—The American Academy of Orthopaedic Surgeons will hold its annual meeting Jan. 23-28 at the Palmer House, Chicago, under the presidency of Dr. Harold B. Boyd, Memphis, Tenn. Eighty instructional courses will be conducted Jan. 24-27. On Monday, 7 p. m., at the annual dinner meeting under the auspices of the program committee on instructional courses, Dr. J. Alpert Key, St. Louis, will serve as moderator for an "Information Please" program with the following panel: Drs. Edwin F. Cave, Boston, Paul C. Colona, Philadelphia, Donald E. King, Wooster, Ohio, and Earl D. McBride, Oklahoma City. Illustrated case histories will be presented for discussion by the panel, and brief presentations of cases will be made by the panel for diagnosis from the audience. Audiovisual programs have been planned for Saturday afternoon, and for Sunday, Tuesday, and Wednesday, 4 to 5 p. m. The annual banquet (dress optional) Wednesday, 7 p. m., will include presentation of the distinguished guests, the Kappa Delta award, dancing, and a floor show. Invited presentations include:

The Muscle Pedicled Bone Graft—An Experimental Study, Joel Hartley and Norman J. Silver, New York.
Osteotomy and Osteotomy Combined with Bone Graft in the Treatment of Nonunion Following Fracture of the Femoral Neck, Marcus J. Stewart and Robert E. Wells, Memphis, Tenn.
Intracapsular Fracture of the Neck of the Femur, Mather Cleveland and J. William Fielding, New York.
Bone and Joint Tuberculosis, and Its Treatment, Oswald P. Campos, Rio de Janeiro, Brazil.
Surgical Treatment of Spondylolisthesis Without Spinal Fusion (Excision of the Loose Lamina with Decompression of the Nerve Roots), Gerald G. Gill, San Francisco, John G. Manning, Pasadena, Calif., and Hugh L. White, San Francisco.
Diagnosis of Orthopaedic Diseases by Aspiration Biopsy, Carlos E. Ottolenghi, Buenos Aires, Argentina.
Hyperplastic Periosteal Osteogenesis in Infancy, Harry E. Barnett and Sol P. Ditkowsky, Chicago.
Reconstructive Surgery of the Hand in Cerebral Palsy and Spastic Paralysis Resulting from Spinal Cord Trauma, J. Leonard Goldner, Durham, N. C.
Experiences with the Palmer Open Reduction of Os Calcis Fractures, Jack E. Maxfield and Frederick J. McDermott, Wichita Falls, Texas.
Treatment of Fractures of the Os Calcis Involving the Subtalar Joint—A Preliminary Report, Leonard B. Barnard and John K. Odegard, Oakland, Calif.
Shortcomings of the Stapling Operation, Alvia Brockway and William A. Craig, Los Angeles.

Meeting on Hand Surgery in Chicago.—The American Society for Surgery of the Hand will hold its annual meeting in the Palmer House, Chicago, Jan. 22-23 under the presidency of Dr. Darrel T. Shaw, Cleveland. Visual presentations will be made by Dr. Daniel C. Riordan, New Orleans (Hand Deformities in Hansen's Disease, 16 mm. silent movie); Drs. Leo Mayer and Wallace Green, New York (Experiences with the Steindler Flexoplasty at the Elbow, 16 mm. motion picture and 35 mm. Kodachromes); and Dr. Raymond M. Curtis, Baltimore (Capsulectomy of the Interphalangeal Joints of the Fingers, motion pictures and slides). At the Saturday morning session the honored guest of the society, Patrick Clarkson, M.B.S., M.B., B.S., (London) F.R.C.S. (England), will address the clinical session, 9 a. m., in Room 641, Northwestern University Medical School. Cases will be presented by Drs. Sumner L. Koch, Michael L. Mason, and Harvey S. Allen, all of Chicago. Members may bring one guest to the session and to the luncheon at Normandy House that will follow. In the afternoon Dr. Clarkson will discuss "Methods and Results in Primary Hand and Finger Repairs in the United Kingdom." Other presentations include:

Digital Arthroplasty, Robert E. Carroll and T. H. Taber, New York.
Observations on Internal Fixation for Fracture of the Carpal Scaphoids, Harrison L. McLaughlin, New York.
Evaluation of the Injured Hand by the Grip Test, Charles O. Bachtol, Oakland, Calif.
Preliminary Report on Nerve Repair Research, Richard I. Gonzalez, San Mateo, Calif.
Studies on the Arterial Circulation of the Hand, Herbert Conway and Richard B. Stark, New York.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.
1954 Annual Meeting, San Francisco, June 21-25.
1954 Clinical Meeting, Miami, Florida, Nov. 30-Dec. 3.
1955 Annual Meeting, Atlantic City, N. J., June 6-10.
1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.
1956 Annual Meeting, Chicago, June 11-15.

Annual Congress on Industrial Health, Brown Hotel, Louisville, Ky., Feb. 24-25. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Congress on Medical Education and Licensure, Palmer House, Chicago, Feb. 7-9. Dr. Edward L. Turner, 535 N. Dearborn St., Chicago 10, Secretary.

National Conference on Rural Health, Baker Hotel, Dallas, Texas, Mar. 4-6. Mrs. Arline Hibbard, 535 N. Dearborn St., Chicago 10, Secretary.

American Academy of Allergy, Shamrock Hotel, Houston, Texas, Feb. 1-3. Dr. Alan G. Cazort, 1425 West 7th St., Little Rock, Ark., Secretary.

American Academy of Forensic Sciences, Drake Hotel, Chicago, Feb. 25-27. Prof. Ralph F. Turner, Michigan State College Dept. of Police Administration, East Lansing, Mich., Secretary.

American Academy of Occupational Medicine, John Marshall Hotel, Richmond, Va., Feb. 11-12. Dr. Leonard J. Goldwater, 600 W. 168th St., New York 32, Secretary.

American Academy of Orthopaedic Surgeons, Palmer House, Chicago, Jan. 23-28. Dr. John R. Norcross, 122 S. Michigan Blvd., Chicago 3, Secretary.

American College of Radiology, Drake Hotel, Chicago, Feb. 5. Mr. William C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

American Federation for Clinical Research:
  Southern Section, Jung Hotel, New Orleans, Jan. 29. Dr. William Parson, University of Virginia School of Medicine, Charlottesville, Va., Chairman.
  Western Section, Auditorium, University of Oregon Medical School, *Portland, Ore., Jan. 28. Dr. I. S. Edelman, University of California* Medical Center, San Francisco Hospital, San Francisco 15, Secretary.

American Laryngological, Rhinological and Otological Society:
  Middle Section, Park Plaza Hotel, St. Louis, Jan. 18. Dr. French K. Hansel, 634 N. Grand Blvd., St. Louis, Chairman.
  Western Section, University of Oregon Medical School, Portland, Ore., Feb. 6. Dr. Guy L. Boyden, 1735 N Wheeler Ave., Portland 12, Ore., Chairman.

American Orthopsychiatric Association, Hotel Commodore, New York, March 11-13. Dr. Marion F. Langer, Room 210, 303 Lexington Ave., New York 16, Secretary.

American Protestant Hospital Association, Palmer House, Chicago, Feb. 10-12. Mr. Albert G. Hahn, Protestant Deaconess Hospital, Evansville, Ind., Executive Secretary.

American Society for Surgery of the Hand, Palmer House, Chicago, Jan. 22. Dr. George V. Webster, 960 East Green St., Pasadena 1, Calif., Secretary.

Central Surgical Association, Statler Hotel, Detroit, Feb. 18-20. Dr. Robert M. Zollinger, University Hospital, Columbus 10, Ohio, Secretary.

Chicago Medical Society Annual Clinical Conference, Palmer House, Chicago, March 2-5. Dr. Maurice M. Hoeltgen, 86 East Randolph St., Chicago, Secretary.

Conference of Teachers of Clinical Radiology, Walton Room, Drake Hotel, Chicago, Feb. 6. Dr. Aubrey O. Hampton, 20 North Wacker Drive, Chicago, Chairman.

Michigan Clinical Institute, Sheraton-Cadillac Hotel, Detroit, March 10-12. Dr. L. Fernald Foster, 606 Townsend St., Lansing 15, Mich., Secretary.

Mid-South Post Graduate Medical Assembly, Hotel Peabody, Memphis, Tenn., Feb. 9-12. Dr. Thurman Crawford, 869 Madison Ave., Memphis, Tenn., Secretary.

National Conference on Trichinosis, A. M. A. Headquarters, Chicago, March 1. Dr. S. E. Gould, Wayne County General Hospital, Eloise, Mich., Chairman.

National Society for the Prevention of Blindness, Jefferson Hotel, St. Louis, March 10-12. Dr. F. M. Foote, 1790 Broadway, New York 19, Executive Director.

Northwest Society for Clinical Research, Portland, Ore., Jan. 28. Dr. Arthur L. Rogers, 1216 S.W. Yamhill St., Portland, Ore., Secretary.

Regional Meetings, American College of Physicians:
  Colorado Springs, Colo., Jan. 22-23. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.
  Topeka, Kans., March 19. Dr. William C. Menninger, 3617 West 6th Ave., Topeka, Kansas, Governor.
  Richmond, Va., Feb. 25. Dr. Charles M. Caravati, 807 West Franklin St., Richmond 20, Va., Governor.
  Southern California, Riverside, Feb. 13-14. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

Sectional Meetings, American College of Surgeons:
  Charlotte, N. C., Hotel Charlotte, Feb. 1-3. Dr. Thomas D. Sparrow, 403 North Tryon St., Charlotte 2, N. C., Chairman.
  Reno, Nev., Riverside Hotel, Feb. 25-26. Dr. Kenneth F. Maclean, 120 N. Virginia St., Reno, Nev., Chairman.
  Omaha, Neb., Hotel Fontenelle, March 1-4. Dr. Earl A. Connolly, 107 South 17th St., Omaha, Chairman.

Society of University Surgeons, Sheraton Hotel, Rochester, N. Y., Feb. 11-13. Dr. C. Rollins Hanlon, 1325 South Grand Blvd., St. Louis, Secretary.

Southeastern Surgical Congress, Tutwiler Hotel, Birmingham, Ala., March 8-11. Dr. Benjamin T. Beasley, 45 Edgewood Ave. S.E., Atlanta, Ga., Secretary.

Western Society for Clinical Research, Portland, Ore., Jan. 29-30. Dr. Herbert N Hultgren, Stanford Hospital, San Francisco 15, Secretary.

Western Society of Electro-Encephalography, Del Monte Lodge, Pebble Beach, Calif., March 7-8. Dr. Sylvester N. Berens, 902 Boren Ave., Seattle, Secretary.

FOREIGN

Association of Surgeons of Great Britain and Ireland, Leeds, England, May 13-15, 1954. Dr. Henry W. S. Wright, 45 Lincoln's Inn Fields, London W.C.2, England, Honorary Secretary.

British Medical Association, Glasgow, Scotland, July 1-9, 1954. Dr. A. Macrae, B.M.A. House, Tavistock Square, London, W.C.1, England, Secretary.

Canadian Medical Association, Vancouver, B. C., Canada, June 14-18, 1954. Dr. T. C. Routley, 244 St. George St., Toronto 5, Ont., Canada, General Secretary.

Conference of International Union Against Tuberculosis, Madrid, Spain, Sept. 26-Oct. 2, 1954. Secretariat, Escuela de Tisiologia, Ciudad Universitaria, Madrid, Spain.

Congress of International Anesthesia Research Society, Los Angeles, Calif., U. S. A., Oct. 4-7, 1954. For information write: Dr. T. H. Seldon, 102-110 Second Avenue S. W., Rochester, Minn., U. S. A.

Congress of International Association for the Prevention of Blindness, New York, N. Y., U. S. A., Sept. 12-17, 1954. Professor Franceschetti, 2 Avenue Mirmot, Geneva, Switzerland, Secretary-General.

Health Congress of the Royal Sanitary Institute, Scarborough, England, April 27-30, 1954. Mr. P. Arthur Wells, Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W.1, England, Secretary.

International Cancer Congress, Sao Paulo, Brazil, July 23-29, 1954. Prof. A. Prudente, 171 rua Benjamin Constante, Sao Paulo, Brazil, President.

International Conference on Thrombosis and Embolism, Basle, Switzerland, July 20-24, 1954. Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

International Congress on Child Psychiatry, University of Toronto, Toronto, Ontario, Canada, Aug. 13-14, 1954. Miss Helen Speyer, International Association for Child Psychiatry, 1790 Broadway, New York 19, New York, U. S. A., Executive Officer.

International Congress of Clinical Pathology, Washington, D. C., U. S. A., Sept. 6-10, 1954. Dr. Robert A. Moore, Washington University School of Medicine, St. Louis 10, Missouri, U. S. A., Chairman, Committee on Arrangements.

International Congress on Diseases of the Chest, Barcelona, Spain, Oct. 4-8, 1954 Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Illinois, Executive Secretary.

International Congress on Group Psychotherapy, Toronto, Ont., Canada, Aug. 12-14, 1954. Dr. J. L. Moreno, Room 327, 101 Park Ave., New York 17, N. Y., U. S. A., Director of Organizing Committee.

International Congress of Hematology, Paris, Sept. 6-11, 1954. Dr. Jean Bernard, 86 rue d'Assas, Paris 6e, France, Secretary.

International Congress of the History of Medicine, Rome and Salerno, Italy, Sept. 13-20, 1954. For information write: Segreteria XIV Congresso Internazionale di Storia della Medicina, Instituto di Storia della Medicine, Citta Universitaria, Rome, Italy.

International Congress of Hydroclimatism and Thalassotherapy, Dubrovnik, Yugoslavia, May 8-16, 1954. Prof. C. Plavsic, Zeleni venac 1, Belgrade, Yugoslavia, Secretary General.

International Congress of Industrial Medicine, Naples, Italy, Sept. 13-19, 1954. Professor Scipione Caccuri, Director, Institute of Industrial Medicine Policlinico, Naples, Italy, Chairman, Organizing Committee.

International Congress of Internal Medicine, Stockholm, Sweden, Sept. 15-18, 1954. Professor Anders Kristenson, Karolinska Sjukhuset, Stockholm 60, Sweden, Secretary-General.

International Congress of International College of Surgeons, São Paulo, Brazil, April 26-May 2, 1954. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U. S. A., Secretary-General.

International Congress on Mental Health, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

International Congress of Nutrition, Amsterdam, Netherlands, Sept. 14-18, 1954. For information write: Dr. M. van Eekelen, Centraal Instituut voor Voedingsonderzoek T.N.O., 61 Catharynesingel, Utrecht, Netherlands.

International Congress on Obstetrics and Gynecology, Geneva, Switzerland, July 26-31, 1954. Dr H. de Watteville, Maternité Hôpital Cantonal, Geneva, Switzerland, President.

International Congress of Ophthalmology, University of Montreal and McGill University, Montreal, Canada, Sept. 10-11, 1954, and Waldorf-Astoria, New York, N. Y., U. S. A., Sept. 12-17, 1954. Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minnesota, U. S. A., Secretary-General.

International Congress of Orthopedic Surgery and Traumatology, Berne, Switzerland, Aug. 30-Sept. 3, 1954. For information write: Professor M. Dubois, Isle-Hospital, Berne, Switzerland.

International Congress of Psychology, Montreal, Canada, June 7-12, 1954. For information write: Prof. H. S. Langfeld, International Union of Scientific Psychology, Eno Hall, Princeton University, Princeton, N. J., U. S. A.

International Congress for Psychotherapy, Zurich, Switzerland, July 21-24, 1954. Dr. H. K. Fierz, Theaterstrasse 12, Zurich 1, Switzerland, Secretary General.

International Gerontological Congress, London and Oxford, England, July 12-22, 1954. Prof. R. E. Tunbridge, General Infirmary, Department of Medicine, The University, Leeds, England, President.

International Poliomyelitis Congress, Rome, Italy, Sept. 6-10, 1954. Mr. Stanley E. Henwood, 120 Broadway, New York 5, N. Y., U. S. A., Executive Secretary.

International Society of Blood Transfusion, Paris, France, Sept. 12-19, 1954. For information write: Colonel Julliard, Société Internationale de Transfusion Sanguine, 53 Boulevard Diderot, Paris 12e, France.

International Society for Cell Biology, Leiden, Netherlands, Sept. 2-9, 1954. Professor Peter J. Gaillard, University of Leiden, Leiden, Netherlands, Secretary.

International Society of Geographical Pathology, Washington, D. C., U. S. A., Sept. 6-10, 1954. Professor Fred C. Roulet, Hebelstrasse 24, Basle, Switzerland, Secretary-General.

Irish Medical Association, Killarney, Ireland, July 7-10, 1954. Dr. P. J. Delaney, 10, Fitzwilliam Place, Dublin, Ireland, Medical Secretary.

Journees Medicales, Paris, France, April 21-25, 1954. For information write: Secretariat of the Journees, 12, rue Pierre-Geofroix, Colombes (Seine) France.

Latin American Congress of Otorhinolaryngology, Caracas, Venezuela, Feb. 21-25, 1954. Dr. Victorino Marquez Reveron, Centro, Medico, Caracas, Venezuela, Secretary-General.

Latin American Congress of Physical Medicine, Medellin, Columbia, South America, Feb. 15-20, 1954. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York 21, N. Y., U. S. A., Executive Director.

Pan American Congress of Ophthalmology (Interim), São Paulo, Brazil, June 17-21, 1954. Dr. Moacyr E. Alvaro, São Paulo, Brazil, President.

Pan American Congress of Otorhinolaryngology and Bronchoesophagology, Mexico, D.F., Mexico, Feb. 28-March 4, 1954. Dr. Maximo Garcia Castañeda, Humboldt 17, Mexico 1, D.F., Mexico, Secretary-General.

Pan American Medical Association, International Medical Cruise Congress, S. S. Nieuw Amsterdam, Jan. 6-22, 1954. Dr. Joseph J. Eller, 745 Fifth Avenue, New York 22, N. Y., U. S. A., Executive Director.

Pan-Pacific Surgical Congress, Honolulu, Hawaii, Oct. 7-18, 1954. Dr. F. J. Pinkerton, Suite 7, Young Bldg., Honolulu 13, Hawaii, Director General.

Sectional Meeting, American College of Surgeons, London, England, May 17-19, 1954. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Ill., U. S. A., Secretary.

South American Congress of Angiology, Sao Paulo, Brazil, July 1954. For information write: Dr. Rubens Carlos Mayall, Rua Senador Vergueiro 73, Rio de Janeiro, Brazil, S. A.

World Congress of Cardiology, Washington, D. C., and Bethesda, Md., U. S. A., Sept. 12-17, 1954. Dr. L. W. Gorham, 44 East 23d St., New York 10, N. Y., U. S. A., Secretary-General.

World Congress of International Society for the Welfare of Cripples, Scheveningen-The Hague, Netherlands, Sept. 13-17, 1954. Secretariat: Miss H. P. Post, Pieter Lastmarkade 37, Amsterdam Z, Netherlands.

World Federation of Occupational Therapists, Edinburgh, Scotland, August 17, 1954.

World Medical Association, Rome, Italy, Sept. 26-Oct. 2, 1954. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology: *Written.* Various Centers, July 16. Final date for filing applications in Jan. 16. Sec., Dr. Curtiss B. Hickox, 80 Seymour St., Hartford 15.

American Board of Internal Medicine: *Oral.* New Orleans, Feb. 2-5 (candidates in south and southwest). Chicago, April 1-3 (candidates in the midwest). Los Angeles, June 15-17 (candidates west of the Rocky Mountains and west coast). The closing date for acceptance of applications for New Orleans, Chicago and Los Angeles was Jan. 2. New York, Sept. 22-24 (candidates on the east coast). The closing date for acceptance of applications will be April 1. *Written.* Oct. 18. Final date for acceptance of applications will be May 1. *Subspecialties. Cardiovascular Disease.* Chicago, April 1. *Gastroenterology.* Chicago, April 2-3. The closing date for acceptance of applications for the subspecialties will be Jan. 15. Exec. Sec.-Treas., Dr. William A. Werrell, One West Main St., Madison 3, Wis.

American Board of Neurological Surgery: *Oral.* Chicago, May or June. Final date for filing application is Jan. 15. Sec., Dr. Leonard T. Furlow, 600 S. Kingshighway, St. Louis 10.

American Board of Neurology and Psychiatry: *Psychiatry and Neurology.* Chicago, April 29-30. Final date for filing application is Feb. 1. Sec., Dr. David A. Boyd, Jr., 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Obstetrics and Gynecology: Written examination (Part I) and review of case histories for all candidates will be held in various cities of the United States, Canada, and military centers outside the continental United States on Feb. 5. Case abstracts to be sent by the candidate to the Secretary are now due. *Part II.* Chicago, May 10-17. Final date for filing application is April 1. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

American Board of Ophthalmology: *Written.* Various Centers, January 25-26, 1954. Final date for filing applications was July 1. *Practical.* San Francisco, June 25-29; New Orleans, Feb. 5-11, 1955. Final date for filing application for 1955 written examination is July 1. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

American Board of Orthopaedic Surgery: *Part II.* Chicago, Jan. 20-22. Final date for filing application was August 15. Final date for filing application for Part I is Nov. 30. Sec., Dr. Harold A. Sofield, 122 S. Michigan Ave., Chicago 3.

American Board of Otolaryngology: *Oral.* Boston, May 17-21. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

American Board of Pediatrics: *Written.* Selected Places, Jan. 15. This is the only written examination which will be given during 1954. *Oral.* Washington, D. C., Feb. 19-21; Des Moines, March 19-21; New York City, May 1-3; San Francisco, June 25-27; Chicago, Oct. 8-10 and New Haven, December.

American Board of Physical Medicine and Rehabilitation. *Oral and Written.* Washington, D. C., Sept. 5-6. Final date for filing applications is March 31. Sec., Dr. Earl C. Elkins, 30 N. Michigan Ave., Chicago.

American Board of Proctology: *Part I.* Kansas City, Philadelphia and San Francisco, May 8. Sec., Dr. Louis A. Buie, 102-110 Second Ave. S.W., Rochester, Minn.

American Board of Psychiatry and Neurology: Chicago, May 10-11. Sec., Dr. David A. Boyd, Jr., 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Radiology: *Oral.* Spring 1954. Final date for filing application was Dec. 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

American Board of Urology: *Oral-clinical and pathology.* Chicago, Feb. 17-20. Sec., Dr. Harry Culver, 30 Westwood Road, Minneapolis 16

Board of Thoracic Surgery: *Written.* Various centers throughout the country. Feb. 26. Final date for filing application is Jan. 1. Sec., Dr. Wm. M. Tuttle, 1151 Taylor Street, Detroit, Mich.

DEATHS

Mellby, Oscar Fredrick ⊕ Thief River Falls, Minn.; born in New Richland, Minn., May 1, 1876; Minneapolis College of Physicians and Surgeons, medical department of Hamline University, 1901; an Associate Fellow of the American Medical Association; in 1938 elected president of the Northern Minnesota Medical Association; elected the first president of the Pennington County Medical Society when it was organized as a separate county organization in 1950; served at various times as president of the school board, the park board, and the Parent-Teachers Association; for nine years a member of the state board of health; formerly president of the local Rotary Club, health officer, and city physician; was instrumental in the establishment of Oakland Park Sanatorium and when the commission was formed in 1916 he became a member; served that commission as president for many years and was the only original member remaining on the board at the time of his death; on June 30, 1947, the citizens of Thief River Falls united in celebrating "Dr. Mellby Day" in recognition of his 40 years of service to their community; surgeon for the Soo Line; affiliated with Northwestern Hospital, where he died Nov. 5, aged 77.

Christensen, Clarence Arthur ⊕ Dearborn, Mich.; Born in St. Joseph, Mich., Jan. 3, 1892; University of Michigan Medical School, Ann Arbor, 1916; past president of the Dearborn Medical Society; member of the Ambulatory Fracture Association, American Cancer Society, Association of American Physicians and Surgeons, Detroit Academy for the Surgery of Trauma, Detroit Historical Society, Detroit Museum of Art, International Anesthesia Research Society, Industrial Medical Association, and the Michigan Association of Industrial Physicians and Surgeons; was first health officer for the city of Springwells and held the position when the city's name was changed to Fordson and later to Dearborn; served during World War I; founder, president, and chief of staff, Dearborn Medical Center and Dearborn Medical Center Hospital; affiliated with Harper, Providence, Mount Carmel, Mercy, and Delray General hospitals in Detroit; director of the newly formed bank of Dearborn; past president, Dearborn Rotary Club; died Nov. 22, aged 61, of coronary occlusion.

Hicks, Edgar Obadiah ⊕ Clinton, Iowa; born in Hastings, Neb., March 30, 1920; State University of Iowa College of Medicine, Iowa City, 1944; certified by the National Board of Medical Examiners; served a rotating internship at St. Francis Hospital, La Crosse, Wis., and an orthopedic residency at University Hospitals in Iowa City; served in the European theater during World War II; in 1951 secretary-treasurer of the Clinton County Medical Society; affiliated with the De-Witt (Iowa) Community Hospital, St. Joseph's Mercy Hospital, and the Jane Lamb Memorial Hospital, where he was secretary of the hospital staff; died in Mount Vernon, Iowa, Oct. 18, aged 33, of a heart attack.

Crook, Jere Lawrence ⊕ Jackson, Tenn., born in Henderson, Tenn., March 10, 1874; University of Nashville Medical Department, 1894; Vanderbilt University School of Medicine, Nashville, 1895; member of the House of Delegates of the American Medical Association in 1912, 1915-1916, and 1923-1924; fellow of the American College of Surgeons; past president of the Tennessee State Medical Association, of which he was councilor of the Eighth District, and the Southern Medical Association; division surgeon, Illinois Central Railroad; formerly surgeon at the Crook Sanatorium; died in the Vanderbilt University Hospital Nashville, Oct. 31, aged 79, of bronchopneumonia.

Doyle, Raymond Edward ⊕ St. Louis; born in Pueblo, Colo., Dec. 20, 1895; St. Louis University School of Medicine, 1921; member of the American Psychiatric Association; instructor in neurology and psychiatry, St. Louis University School of Medicine from 1934 to 1941, when he became senior instructor; senior neuropsychiatrist from 1926 to 1946 at Veterans Administration Hospital in Jefferson Barracks, Mo., where he was supervisor of all neuropsychiatric departments from 1934 to 1946; associate neuropsychiatrist, Alexian Brothers Hospital and St. Mary's Group of Hospitals; died Nov. 19, aged 57, of arteriosclerosis.

Jenovese, Joseph Francis ⊕ Hartford, Conn.; born in Boswell, Pa., June 28, 1907; University of Pennsylvania School of Medicine, Philadelphia, 1930; member of the Alumni Association of the Mayo Foundation; fellow of the American College of Physicians; served during World War II; interned at Mercy Hospital in Pittsburgh; at one time instructor in medicine at his alma mater; formerly a fellow in medicine at Mayo Foundation in Rochester, Minn.; consultant in medicine, Manchester (Conn.) Memorial Hospital; affiliated with Hartford Hospital, where he died Nov. 24, aged 46, of bilateral hydronephrosis, and lymphoma.

Arensdorf, Edward Leonard ⊕ Chicago; Loyola University School of Medicine, Chicago, 1929; affiliated with St. Bernard's and Illinois Central hospitals; assistant chief surgeon for the Chicago and Eastern Illinois and the Chicago and Western Indiana railroads; district surgeon for the Wabash Railroad; died Dec. 5, aged 50, of cerebral hemorrhage.

Augustine, Grant, Hot Springs National Park, Ark.; State University of Iowa College of Medicine, Iowa City, 1900; for many years practiced in Council Bluffs, Iowa, serving as president and secretary-treasurer of the Pottawattamie County Medical Society, and on the staffs of Jennie Edmundson and Mercy hospitals; served during World War I; fellow of the American College of Surgeons; died Nov. 15, aged 79.

Beach, Lena Alice, Los Angeles; State University of Iowa College of Medicine, Iowa City, 1901; at one time superintendent of the Home School for Girls in Sauk Centre, Minn.; for many years superintendent of the Woman's Reformatory in Rockwell City, Iowa; formerly on the staff of the Mount Pleasant (Iowa) State Hospital; died Oct. 29, aged 75, of cerebral thrombosis.

Beatty, Hannah Jane ⊕ Clinton, N. J.; University of Illinois College of Medicine, Chicago, 1916; died Oct. 25, aged 66.

Conroy, Frank Davies, Cincinnati; Johns Hopkins University School of Medicine, Baltimore, 1918; served on the staffs of the Christian R. Holmes Hospital, Cincinnati General Hospital, and the Jewish Hospital; died Nov. 20, aged 60, of cancer.

Cooper, Benjamin ⊕ Philadelphia; Temple University School of Medicine, Philadelphia, 1923; died in the Graduate Hospital of the University of Pennsylvania Oct. 30, aged 60, of heart disease.

Cooper, Edward ⊕ Worcester, Mass.; Jefferson Medical College of Philadelphia, 1905; died Nov. 5, aged 84, of cerebral arteriosclerosis.

Cotton, Norman Therkield ⊕ Montclair, N. J.; College of Physicians and Surgeons, Boston, 1908; formerly health officer of Paterson; died in St. Mary's Hospital, Orange, Nov. 18, aged 68.

Cottrell, Emile Lester ⊕ San Jose, Calif.; Jefferson Medical College of Philadelphia, 1903; affiliated with San Jose and O'Connor hospitals; died Oct. 31, aged 79.

Curley, Clarence Proctor ⊕ Fort Lauderdale, Fla.; University of Vermont College of Medicine, Burlington, 1895; member of the Massachusetts Medical Society; served during World War I; for many years practiced in Provincetown, Mass., where he was associated with the U. S. Public Health Service; died Nov. 10, aged 85, of chronic myocardial fibrosis and cardiac decompensation.

⊕ Indicates Member of the American Medical Association.

Cyr, Alphonse, Barnesville, Minn.; Laval University Faculty of Medicine, Quebec, Canada, 1897; served during World War I; died Sept. 19, aged 81.

Deeds, Leonard Weaver ⊕ Buckhannon, W. Va.; University of Louisville (Ky.) Medical Department, 1909; on the staff of St. Joseph's Hospital; died Nov. 2, aged 72, of cerebral thrombosis.

Diller, Francis S., ⊕ Rantoul, Ill.; College of Physicians and Surgeons of Chicago, 1895; past president of the Rantoul Township high school board; served on the staff of Mercy Hospital in Champaign; died Nov. 14, aged 92, of senility.

Eicher, Charles Grant ⊕ Ontario, Calif.; Western Pennsylvania Medical College, Pittsburgh, 1897; an Associate Fellow of the American Medical Association; fellow of the American College of Surgeons; member of the Medical Society of the State of Pennsylvania, of which he was formerly vice-president; formerly practiced in McKees Rocks, Pa., where he was on the staff of Ohio Valley General Hospital; died Oct. 9, aged 82.

Flores, Ricardo Camacho, Detroit; University of Michigan Medical School, Ann Arbor, 1953; interned at Mount Carmel Mercy Hospital, where he died Nov. 12, aged 31, of malignant hypertension and uremia.

Funkhouser, Arthur Guy ⊕ Indianapolis; Indiana University School of Medicine, Indianapolis, 1923; served during World War I; an examiner for the Selective Service System during World War II; affiliated with Methodist and St. Vincent's hospitals; died in the Veterans Administration Hospital Nov. 21, aged 59, of glioblastoma multiforme of the right parietal lobe of the brain.

Gluck, Harold, Forest Hills, N. Y.; University and Bellevue Hospital Medical College, New York, 1912; died Oct. 30, aged 62.

Golbey, Jacob Martin ⊕ Massapequa, N. Y.; Cornell University Medical College, New York, 1904; died Oct. 15, aged 70.

Grove, Helen Irene ⊕ Largo, Fla.; University of Illinois College of Medicine, Chicago, 1949; interned at Grant Hospital in Chicago; died in Tallahassee Sept. 30, aged 41.

Hammett, Albert Culver, Crivitz, Wis.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1897; medical officer in the British Army in Southern Rhodesia during the Boer War; served during World War I; for many years practiced in Chicago, where he was on the staff of the Ravenswood Hospital, serving as chief of staff from 1929 to 1934; died Sept. 10, aged 81.

Harroun, William Arthur ⊕ Portland, Ore.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; died in the Emanuel Hospital Nov. 16, aged 81, of a heart attack.

Hearn, William Prettyman ⊕ Philadelphia; Jefferson Medical College of Philadelphia, 1899; assistant professor of surgery at his alma mater; fellow of the American College of Surgeons; affiliated with Beebe Hospital in Lewes, Del., and Jefferson and Philadelphia General hospitals; medical director of the Philadelphia Electric Company; died in Lewes, Del., Nov. 10, aged 79, of cerebral hemorrhage.

Houston, James ⊕ Swartz Creek, Mich.; Detroit College of Medicine, 1896; served during World War I; affiliated with Women's Hospital, St. Joseph Hospital, and Hurley Hospital in Flint, where he died Nov. 1, aged 84, of myocarditis and a fractured hip.

Kennedy, Jacob Jenkins ⊕ Tuscaloosa, Ala.; Missouri Medical College, St. Louis, 1898; died in Druid City Hospital Oct. 10, aged 86, of uremia.

Leahy, Edward O'Hearn ⊕ Jackson, Mich.; University of Michigan Medical School, Ann Arbor, 1920; affiliated with W. A. Foote Memorial and Mercy hospitals; died Nov. 21, aged 58, of heart failure.

Merrell, Howard Valentine ⊕ Brooklyn; Columbia University College of Physicians and Surgeons, New York, 1898; served on the staffs of the Kings County Hospital and the Caledonian Hospital, where he died Nov. 18, aged 78.

Michael, Oscar Willard ⊕ Muncie, Ill.; Medical College of Indiana, Indianapolis, 1898; past president of the Vermilion County Medical Society; an Associate Fellow of the American Medical Association; served during World War I; president of the Oakwood Township High School District Board of Education for many years, retiring in 1952; member of the courtesy staffs at Lake View and St. Elizabeth hospitals in Danville; died Nov. 14, aged 78.

Parker, Dayton L., Detroit; Michigan College of Medicine and Surgery, Detroit, 1901; affiliated with Provident Hospital; died Nov. 17, aged 76, of arteriosclerosis.

Powell, Raymond Knight ⊕ Rosemont, Pa.; Jefferson Medical College of Philadelphia, 1930; formerly member of the Radnor Township School Board; on the staff of the Bryn Mawr (Pa.) Hospital; died in Philadelphia Nov. 17, aged 60.

Stough, Charles Francis ⊕ Colorado Springs, Colo.; Chicago Homeopathic Medical College, 1895; served during World War I; died Dec. 11, aged 79.

Thibault, Zephirin, Manville, R. I.; School of Medicine and Surgery of Montreal, Faculty of Medicine of the University of Laval at Montreal, 1897; served on the staff of the Woonsocket (R. I.) Hospital; died in Woonsocket, Nov. 14, aged 84.

Thornton, Harry Ruhl ⊕ Lewisburg, Pa.; Medico-Chirurgical College of Philadelphia, 1910; medical officer in the U. S. Army during World War I; formerly surgeon for the Pennsylvania Railroad; died Nov. 23, aged 76, of myocarditis and arteriosclerosis.

Titus, Clifton Ross ⊕ Bedford, Va.; Medical College of Virginia, Richmond, 1931; member of the American Academy of General Practice; past vice-president and treasurer of the Virginia Academy of General Practice; president of the Bedford County Medical Society; died in the John Russell Hospital Nov. 21, aged 53, of aplastic anemia.

Tyvand, James Clarence ⊕ Whitehall, Wis.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1902; died in Arcadia Oct. 26, aged 76, of injuries received when his automobile was struck by a train.

Van Gunten, Frederick J., Milford, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1889; died Sept. 20, aged 85.

Vaughan, Milton, Little Rock, Ark.; Arkansas Industrial University Medical Department, Little Rock, 1892; for many years served in the regular army; veteran of the Spanish-American War; at one time superintendent of the city health department; died Nov. 25, aged 85, of arteriosclerotic heart disease.

Williams, Joshua Rice ⊕ Houston, Miss.; University of Tennessee Medical Department, Nashville, 1894; University of Nashville Medical Department, 1896; died Nov. 26, aged 86.

Williams, Roy D., Antioch, Ill.; Northwestern University Medical School, Chicago, 1900; village health officer; died in the Victory Memorial Hospital, Waukegan, Dec. 13, aged 78.

Wishart, Hagar MacLean ⊕ North East, Pa.; Woman's Medical College of Pennsylvania, Philadelphia, 1906; died Oct. 4, aged 81, of cardiovascular disease and hypostatic pneumonia.

Wood, Walter Childs, New Canaan, Conn.; College of Physicians and Surgeons, medical department of Columbia College, New York, 1889; professor emeritus of surgery at Long Island College Hospital in Brooklyn, where he practiced for many years and was on the staff of the Brooklyn Hospital; died Nov. 23, aged 89.

Wyatt, Arthur Thomas ⊕ Raleigh, N. C.; Jefferson Medical College of Philadelphia, 1919; served during World War II; fellow of the American College of Physicians; died in the Mary Elizabeth Hospital Oct. 3, aged 56, of coronary occlusion, arteriosclerosis, and cirrhosis of the liver.

Young, Oscar Cummings ⊕ Charlestown, N. H.; University of Vermont College of Medicine, Burlington, 1894; died Oct. 9, aged 84, of chronic myocarditis and arteriosclerosis.

FOREIGN LETTERS

COLOMBIA

Surgery of the Esophagus.—The first report in Colombia on the surgical removal of a foreign body (a denture) causing obstruction of the esophagus was made by Drs. A. Castro and G. J. Gil, who performed the operation on a patient in Medellín, in September, 1914. The authors performed a gastrostomy and with the finger removed the false teeth from a point about 10 cm. above the cardia. The first operation on a patient with a lesion of the esophagus was performed by Dr. P. Martinez in 1931, who cured a patient with cardiospasm by the Mikulicz' operation. The first successful resection of a cancer in the lower fourth of the esophagus was performed in Bogotá by Dr. H. Anzola Cubides in June, 1948. In November, 1948, Dr. G. H. Humphreys removed almost all the thoracic segment of the esophagus in the National Institute of Radium, and the patient survived for three months. Six months later, Dr. A. Bonilla Naar successfully performed a similar resection with anastomosis above the aortic arch. At the time of the last follow-up the patient had survived for 2½ years. This was the first case in Colombia in which resection of the thoracic portion of the esophagus was successful. These data and many other details on esophageal surgery in Colombia appear in a book entitled "Cirugía del Esófago y Hernias Diafragmáticas" by Dr. Naar.

The author reported seven cases of diaphragmatic hernia (two traumatic hernias following stab wounds, four hernias of the esophageal hiatus, and one partial agenesis of the left hemidiaphragm). Three of the patients had the Merendino operation (transposition of the esophageal hiatus) with successful results. Different techniques were used on the other patients and all survived. The author believes that thoracotomy is the method of choice in most patients with diaphragmatic hernia and that Merendino's technique is ideal. The abdominal route is indicated in patients with Morgagni's hernias and in infants with congenital hernias. Phrenicectomy will give marked symptomatic relief to elderly patients in whom operation via both the thoracic and the abdominal routes constitutes a great risk, because of the prevalence in them of cardiovascular, hepatic, or renal disorders. The book includes an extensive bibliography.

Radiological Pelvimetry.—Drs. Esguerra Gómez, A. Cárdenas Escobar, and R. González García read a report on the results of clinical and roentgenographic observations on 46 pregnant women in the David Restrepo Maternity Clinic of Bogotá at the First National Convention of Obstetrics and Gynecology, which was held in Bogotá on Sept. 10, 1953. Indications for use of the procedure were based on the principles established by Meave Kenny (British Postgraduate Medical School, University of London) in a report published in 1945. Radiopelvimetry was made as a rule during the last two weeks of pregnancy in order to obtain clear information on the relations of the fetus to the pelvis and on the size of the fetal head at the end of gestation. The authors' interest was, however, mainly concentrated on the pelvic measurements. Cephalometry was given secondary importance because of the lack of exactness of these measurements due to the variability of the head-film distance, with the exception of those cases in which the head was already engaged and in which the isometric (Weitzner) and mathematical (Snow) methods might give exact measurements of the cephalic diameters. The authors used isometric (Weitzner, Thoms, Robins, and Colcher-Sussman) and mathematical (Snow and parallax) methods. The parallax method was introduced in 1952. The early results of radiopelvimetry were disappointing because of the great differences obtained with the measures according to various methods. These differences in the early experience made radiologists believe that radiopelvimetry had no practical value for the solution of obstetric problems. After a year of experimenting, very satisfactory approximations of the images for every pelvic diameter were secured. The roentgenographic reports include general information concerning the fetus, qualitative study of the morphology of the pelvis, and classification of the pelvis according to the four types described by Caldwell, Moloy, D'Esopo, and Swenson. Turner's pelvic index is used for this purpose. Qualitative pelvimetric studies include the measures of the pelvic diameters at the inlet, midpelvis, and outlet and of the subpubic arch as taken in the Chassard-Lapine's position. Every diameter is classified by Snow's classification as small, medium, or large. If the obstetrician makes use of clinical history, physical examination, and radiopelvimetry he can predict the mechanism of parturition in a given case with fair accuracy. The 46 women reported by Gómez and his coworkers were classified as those in whom the mechanism of parturition confirmed the prognosis (37) and those in whom it was contrary to the prognosis (9). The speakers concluded that the figures obtained are an index of the prognostic value of radiopelvimetry. This index can improve through a greater cooperation between obstetricians and radiologists and also through the experience of both as obtained by further observations in a large number of patients.

ISRAEL

Department of Experimental Biology.—The new department of experimental biology was dedicated on Nov. 3, 1953, at the Weizmann Institute of Science, Rehovoth. On the same occasion Prof. Niels Bohr, of Copenhagen, laid the cornerstone of the planned physics institute. He said: "Many who today are far away or, like me, have now the great experience of visiting this country with its inspiring traditions of the past, treasure also their remembrances of personal meetings with Chaim Weizmann. Thus I recall not only meeting him, when, as a young man, I worked with Lord Rutherford in Manchester, but especially learning about the esteem and admiration in which his noble and vigorous personality, as well as his pioneering work, was held by all his colleagues."

Five scientists of fame and distinction were made honorary fellows of the Weizmann Institute of Science at a ceremony in the afternoon. Prof. Niels Bohr of Copenhagen, whose dictum "truth and clarity are complementary," was quoted by Prof. Aharon Katchalsky, who presided, received his fellowship "in recognition of his first having uncovered the structure of the atom and of his decisive part in the subsequent development of our understanding of the nature of matter." The other honorary fellows and their citations were as follows: (1) Prof. Ernst B. Chain, Rome, in recognition of his outstanding research in biochemistry and of his role in giving penicillin to suffering mankind; (2) Prof. Herman F. Mark, Brooklyn, in recognition of his contribution to the new science of macromolecules and to the development of plastic substances; (3) Prof. Linus C. Pauling, Pasadena, Calif., in recognition of his contribution to the understanding of the chemical bond and to the elucidation of molecular structures; and (4) Dr. F. Peyton-Rous, New York, in recognition of his researches in the study of cancer virology and other branches of pathology.

Grants for Hematology Research.—The Hebrew University has been awarded four grants of $1,500 each by the Hematology Research Foundation of Chicago for hematological research projects at the Hebrew University-Hadassah Medical School.

The grants have been allocated to Prof. M. Rachmilewitz for research on the adrenal cortex, adrenocortical hormones, and hemolytic processes; to Dr. A. de Vries for research on

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The items in these letters are contributed by regular correspondents in the various foreign countries.

effects of synthetic polyamino acids on blood cells in leukemia and polycythemia; to Dr. F. Dreyfuss for research on abnormal hemoglobins in various ethnic groups and in hemolytic blood disorders; and to Dr. J. D. Feldman for research on iron transport and the adrenals.

Virus Research in Israel.—The occurrence of neutralizing antibodies against the mouse-adapted strain of poliomyelitis was determined by H. Bernkopf, virus laboratory, Hebrew University-Hadassah Medical School, Jerusalem, and S. Levine, department of hygiene, Israel Ministry of Health, in different age groups of the inhabitants of Jerusalem, members of communal settlements in Galilee, and new immigrants from Yemen. Blood was collected from 10 persons of each age group (0 to 1, 1 to 2 years, etc.) and of each sector. A total of 393 serums were examined. It was found that the percentage of Lansing-positive serums rises from 13% in the first and 35% in the second and third years of life to above 50% in the age group of 4 to 5 years. In the higher age groups the figures approach 100%.

Comparison of these results with similar examinations carried out in other countries shows that antibodies appear in Israel at a later age than in a group of Egyptian children examined by Paul and co-workers, but earlier and in a higher percentage than is frequently found in the Anglo-Saxon countries. Taking Lansing antibodies as an indication of acquired immunity, these differences may serve as a possible explanation for the fact that the poliomyelitis epidemic in Israel in 1950-1951 did not spread to neighboring countries such as Egypt. Immunity seems to be acquired there at an earlier age. It is significant that those age groups that showed a low percentage of Lansing antibodies in our survey had the highest rates during the poliomyelitis epidemic despite the fact that strains of the Brunhilde and not of the Lansing type were isolated from local material sent to the Yale poliomyelitis study group. It is apparent that strains of both the Lansing and the Brunhilde type are widespread in Israel and that contact with both is made at about the same time of life. Antibodies against the Lansing strain may, therefore, also be used as indicators for contact of the population with other strains of poliomyelitis.

A Virus Closely Related to West Nile Virus.—During the months from July to September 1951, a febrile disease in epidemic form was reported by Bernkopf and Lenine in the communal settlement Ma'ayan Tsevi, which is situated in the coastal plain of Israel near Haifa. Both children and adults were attacked. Fever, symptoms indicating meningeal involvement, and a rash were present in many of the children. In the adults severe headache and general malaise were the main complaints. The temperature remained high for a few days only. Recovery was complete and more rapid in the children than in the adults. From the blood of a 14-year-old sick child a virus was isolated that was pathogenic for mice, hamsters, field mice, and chick embryos. It was filterable through Seitz filters. Bacteriological examinations of infective material were always negative. A number of passages were carried out in both mice and eggs. In mice the virus is present in highest concentration in the brain. It is also found in the blood and the other organs. On histological examination constant changes were present in the brain only, in which destruction of neurons and inflammatory changes were always found. No inclusion bodies could be demonstrated. Mice could be infected by various routes. In the egg the virus produced focal lesions on the membrane and ultimate death of the embryo. The virus was neutralized by antiserum against West Nile virus and, to a lesser degree, by antiserums against Japanese B and St. Louis encephalitis. Other antiserums had no effect. Immune mice were resistant to intracerebral infection with at least 10^{-4} lethal doses of a strain of West Nile virus obtained from Dr. J. L. Melnick (Yale University). The virus is obviously closely related to or identical with the West Nile virus. Neutralizing and complement-fixing antibodies against the isolated strain developed during the disease in a number of patients.

LONDON

Sterilization of Infant Feeding Bottles and Nipples.—At the request of the Chief Medical Officer of the Ministry of Health, the Medical Research Council has investigated the relative value of boiling and of hypochlorite treatment for the sterilization of infant feeding bottles and nipples. The results have recently been published in the *Monthly Bulletin of the Ministry of Health* (**12**:214 [Oct.] 1953). Immediately after use and before it is removed from the bottle, the nipple should be washed with cold water. The bottle should then be rinsed with cold water and brushed with warm water and a cleansing agent, such as soda, sodium hexamataphosphate, or other substance, with water softening and detergent properties, provided it is nontoxic. The nipple should be turned inside out and treated in the same way. Both bottle and nipple are rinsed as free as possible of the cleansing agent. The bottle brush, which should be kept in a separate container, is disinfected between feedings by the same method as that used for bottles and nipples. Brushes with metal handles are best sterilized by boiling, as hypochlorite may corrode them.

If the boiling method is used, the cleaned bottle and nipple are totally submerged in cold or warm water in a covered container. The temperature of the water is gradually raised to the boiling point, and the bottles and nipples are allowed to boil for five minutes. They are then left to cool in the water, and the container is kept covered until the next feeding. In using hypochlorite, the bottle and nipple are completely submerged in the solution for three hours and care is taken to exclude air bubbles. Cold or preferably warm, but not hot, water is used to make the solution, which must be made fresh daily. It should contain the equivalent of 100 to 200 ppm of available chlorine. Two methods of preparing the solution are given: 1. To 2 pt. (1 liter) of water add 1 tablespoonful (½ fl. oz.) of a solution of sodium hypochlorite containing 1% available chlorine. Since 1 gm. of sodium hypochlorite is equivalent to 0.95 gm. of available chlorine, such a solution is nearly equivalent to a 1% solution of sodium hypochlorite. 2. To 5 pt. (2.5 liter) of water add 1 tablespoonful of solution of chlorinated soda, B.P.C., 1934. This solution contains 2.5 to 3% of available chlorine. As with the boiling method, the bottle and nipple should be handled as little as possible in preparation of the food.

A comparison of these two methods was made by making plate counts and overnight broth cultures of bottles and nipples from three hospitals and two residential nurseries that use the boiling method and from two hospitals and one nursery that use the hypochlorite method. Of the 56 bottles sterilized by the boiling method, the plate count was sterile in 82.1%; in 12.5% there were 10 to 50 colonies per bottle; and in 5.4% there were more than 50 colonies. The comparable figures for the 113 nipples treated by boiling were 47.8%, 8.8%, 43.4%. Of the 130 bottles treated by the hypochlorite method the figures were 85.4% sterile, 10% with 10 to 50 colonies per bottle and 4.6% with more than 50 colonies per bottle. For the 87 nipples treated by the hypochlorite method, the comparable figures were 79.3%, 12.6%, and 8%. The high proportion of failures in sterilizing the nipples by boiling is attributed partly to the fact that most of the tests were made on nipples from one hospital. The organisms isolated from the nonsterile bottles included aerobic spore bearers, coliform bacilli, alpha hemolytic streptococci, diphtheroids, Micrococcus (Staphylococcus) albus, and various micrococci. It is pointed out that initial sterility of bottle and formula does not guarantee a bacteriologically safe feeding and that there is good reason for using heating methods in which the milk is autoclaved in the bottle with the nipple fitted before the bottle is given to the infant.

Veteran General Practitioner Honored.—At the Harveian Oration on Oct. 16, Dr. W. N. Pickles, of Aysgarth, Yorkshire, whose book on "Epidemiology in Country Practice" is one of the classics of modern medical literature, was presented with the Bisset Hawkins Medal of the Royal College of Physicians of London. According to the citation: "As a student of epidemiology, he stands in the forefront. But perhaps his outstanding achievement is the demonstration that scientific observation and deduction is not only possible under the pressure of a busy general practice, but is a constant stimulus to the quality of the service that the general practitioner can give to his patients." The Bisset Hawkins Medal was founded in 1896 by Captain Edward Wilmot Williams with a gift of £1,000 to the college. It is awarded for notable work in the field of public health.

Divine Healing.—The archbishops of Canterbury and York have appointed a commission on divine healing, "to consider the theological, medical, psychological, and pastoral aspects of 'Divine Healing' with a view to providing within two or three years a report designed to guide the Church to clearer understanding of the subject; and in particular to help the clergy in the exercise of the ministry of healing and to encourage increasing understanding and cooperation between them and the medical profession." The medical members of the commission include Dr. J. A. Hadfield, University of London; Dr. Ronald Henson, London Hospital; Dr. Ronald Cove-Smith; Prof. Alan Moncrieff, University of London; Sir James Paterson Ross, University of London; Dr. Denis Brinton, National Hospital for Nervous Diseases; and Dr. D. Stafford-Clark, Guy's Hospital.

Phenylbutazone.—Phenylbutazone was the subject of a one day symposium organized recently by the Empire Rheumatism Council. Dr. O. Steinbocker, New York, reported a significant analgesic effect in 70% of patients, improvement in function in 50%, and definite improvement in 25%, but he was doubtful that there was any true antirheumatic effect. He encountered toxic effects, mainly nausea, gain in weight, and rash, in 22% of his patients and considered the use of the drug hazardous. As a safety measure, he insists on a weekly leukocyte count, and he believes that a break in treatment of a few days every two weeks might be worth while as a safeguard against toxic reactions. Dr. G. R. Newns (Sheffield) reported relief of symptoms in 70% of both early and advanced cases of rheumatoid arthritis. Of the 197 patients in his series, 65% were still taking phenylbutazone after six months; 13% gave up treatment because of absence of any effect from the beginning, 7% because the initial beneficial effect wore off, and 14% because of toxic effects, including agranulocytosis. Dr. J. P. Currie (Glasgow), who introduced phenylbutazone to England as a remedy for rheumatism, reported that 82 out of 131 patients maintained on treatment for a year or longer are still improving and that none had failed to enjoy continued relief of symptoms. He was one of the few at the symposium who contended that phenylbutazone has a specific antirheumatic action. He cited, in favor of his thesis, the low analgesic potency of the drug in normal persons and animals and in pain of nonrheumatic origin, that is, migraine and trigeminal neuralgia. Also in favor of such a specific action, in his view, was the prompt response to phenylbutazone in cases of rheumatic fever and gout. His experience now includes over 1,000 patients, and the incidence of toxic effects in those patients was insignificant. He suggested that the low incidence, as compared with that of other observers, might be attributed to the fact that he always stopped the administration of all other drugs, including barbiturates, when the patient was receiving phenylbutazone. It is known that the toxicity of phenylbutazone is increased by the simultaneous administration of barbiturates and aminopyrine. Satisfactory results were reported from the use of phenylbutazone in ankylosing spondylitis and osteoarthritis.

Dr. J. G. Humble (London), in treating a series of 44 patients with phenylbutazone, found a significant increase of the clotting time in 6 and a prolongation of prothrombin time in 14. The oral administration of vitamin K_1 resulted in a prompt return to normal of both prothrombin and clotting times. In discussing the effect of phenylbutazone on the excretion of water and electrolytes, Dr. P. O. Williams (London) stated that sodium was retained as a result of a specific increase in tubular reabsorption and that water retention was a secondary effect. The output of potassium was unaffected. According to Dr. R. M. Mason (London), on the basis of his findings in four cases of gout, the urinary excretion of uric acid in a given patient depends on the balance between water retaining and mild uricosuric actions.

NORWAY

Studies of Sprue.—One of the reasons why so many doctors from abroad visit Medical Department B of the Rikshospital in Oslo is that its chief, Prof. H. A. Salvesen, has for many years devoted special attention to the manifestations and pathogenesis of sprue. His series of cases is quite large for Europe, and it has been studied so systematically that he has already extracted much useful information from it. As is so often the case with recently identified diseases, Salvesen has come to the conclusion that nontropical sprue is rather frequent in Norway. In a study of the blood pressure of 84 patients with idiopathic and symptomatic steatorrhea, who ranged in age from 20 to about 70, he has found a remarkable tendency to hypotension, both systolic and diastolic, in every age group. This hypotension was greatest in the older age groups in which hypertension is notoriously common. The highest systolic pressure was 140 mm. Hg, and in most cases it was below 130 mm. Even when the patient could do a full day's work, their blood pressure was low. In nearly every patient the systolic blood pressure ranged from 120 to 75 mm. Hg. Salvesen dissociates this hypotension from the patient's anemia or any salt deficiency or hypokalemia he may be suffering from, and he is inclined to suspect some exogenous cause such as defective absorption of a substance, probably of lipoid nature, necessary for the maintenance of the normal blood pressure and probably also for the production of hypertension. In cooperation with Dr. Jens Böe, Salvesen has studied these patients with special reference to the osteomalacia with which sprue is often associated. About 47% of 85 patients presented the chemical conditions for osteomalacia, a calcium-phosphate solubility product in the serum below a certain value, but demonstrable bone disease developed in only 26%. It seems from this study that the patients in whom bone disease develops are those who show a secondary hyperparathyroidism that manifests itself in a hypophosphatemia but who have a relatively high serum calcium content. The patients whose bones are intact, however, are those who show a lack of this parathyroid reaction and whose serum calcium values remain low. Many of them suffer from tetany. Salvesen finds this hypofunction of the parathyroids to be of great theoretical interest. It seems to support the observation that nutritional deficiencies influence the production of hormones. Salvesen and Böe believe that the parathyroids play the most important role in the production of osteomalacia; hence comes their tentative suggestion that parathyroidectomy may be indicated in the vitamin D-resistant types of the disease.

Prognosis for Tuberculous Meningitis.—Although treatment of tuberculous meningitis with antibiotics and other chemotherapeutic remedies has profoundly changed the prognosis, the experiences of Prof. P. M. Holst at the Ullevaal Hospital show that this disease is very refractory to such treatment when combined with miliary tuberculosis. Here streptomycin has been given since February, 1948, both by intramuscular and by intrathecal injection. From this date till June, 1952, 47 such cases were treated. In all but six of the patients tubercle bacilli were found on culture of the cerebrospinal fluid, and even in these six patients (in four to whom streptomycin or *p*-aminosalicylic acid [PAS] had already been given before the bacteriological examination) there could be no doubt about the diagnosis of tuberculous meningitis. Among the 21 patients who died, 13 also suffered from miliary tuberculosis, whereas among the 23 patients who recovered only 2 suffered from this complication. There remained three patients who were already moribund on admission to hospital. Tuberculosis elsewhere in the body, but not in the form of miliary tuberculosis, was a less serious complication, and among the 17 patients with tuberculosis elsewhere 5 died. Among the 12 patients whose only manifestation of tuberculosis was meningitis, only 3 died. All who recovered did so completely and after recovery showed no clinical sign of the disease and no abnormalities in their cerebrospinal fluid. Intelligence and other tests also suggested that the modern treatment of tuberculous meningitis effects a recovery without permanent psychic disturbances. Dr. Harald Hauge of Tönsberg has published further details of this series of cases in *Nordisk Medicin* for Oct. 22, 1953.

Partial Nephrectomy for Renal Tuberculosis.—At the urological congress held in Frankfurt am Main in April, 1953, Prof. Carl Semb, of the Oslo City Hospital, Ullevaal, gave an account of his experiences with partial nephrectomy for renal tuberculosis. His material consisted of 167 patients treated between December, 1947, and January, 1953. Forty patients were given conservative treatment only, and nephrectomy was performed on another 40. The remaining 87 patients were treated by partial nephrectomy. The author found extra-urogenital tuberculosis to be common: 45% of his patients having suffered from pleurisy; 41%, from pulmonary tuberculosis; and another 41%, from tuberculosis of the bones and joints. He considers it desirable to give sanatorium treatment for at least six months before attempting operative interference with the kidneys, but he has had to make an exception to this rule in patients with tuberculous hydronephrosis and mixed infections, for they may require vigorous treatment with antibiotics. With regard to the indications for partial nephrectomy (applied to the upper part of the kidney in most patients), Semb insisted that this operation should aim at the elimination of destructive foci as is already practiced on patients with cavities in the lungs. Tubercles that represent nondestructive foci in the kidney, its pelvis or ureter, should not be removed. None of his partial nephrectomies had proved fatal, although in seven cases they had been carried out on the patient's only kidney. All the three cases of postoperative wound infection ended in recovery. A follow-up study of 39 patients with a postoperative observation period of at least two years showed that freedom from tubercle bacilli had been achieved in 90%.

Penalty for Preventable Infection with Tuberculosis.—A court judgment in August, 1953, drew attention to the Norwegian law of December, 1947, with its protective measures for tuberculin-negative persons called on to care for tuberculous patients. The plaintiff in this case was a woman, who in August, 1950, at the age of 22, was employed as a domestic servant in a home for the aged. Before she started work, she was examined by this home's physician who found her to be Pirquet-negative. He advised a BCG-vaccination, which she declined. After a year's service in the home, an old man with a history of chronic bronchitis was admitted to it. She was called on to attend to him without being instructed how to avoid infection. She fell ill in November, 1951, and in June, 1952, she was found to be suffering from pleurisy. She was admitted to a tuberculosis hospital and was out of work between November, 1951, and February, 1953, because of her tuberculosis. She claimed damages against both the home for the aged and the doctor in charge of it. The court awarded her damages at the expense of both the home and the doctor, but her refusal to undergo BCG vaccination reduced the damages awarded her. The court found that the doctor had been negligent in several respects, namely, for failing to diagnose the tuberculosis from which the old man suffered and for failing to forbid the plaintiff to work in the home after she had refused BCG vaccination. The matron of the home also was censured with regard to the precautions she should have taken. She might, perhaps, have taken them had the doctor warned her that the plaintiff on arrival at the home was tuberculin-negative. The damages awarded were not great, but the issue of this case is of importance to the medical profession, since the implications of the law of 1947 are stressed.

PARIS

Renal Isoplastic Grafting.—On Oct. 21, 1953, Dr. Louis Michon addressed the Academy of Surgery on the work by Dr. Oecomos and his co-workers in renal isoplastic grafting. One of their patients, a 16-year-old boy, had been a victim of trauma that so severely damaged the renal pedicle on one side that it was considered necessary to remove the kidney. Unfortunately, it was discovered that the kidney on the opposite side was very small and aplastic. This was confirmed by a ureteropyelography. The only way to save such a patient is to give him another kidney. Although all preceding attempts at renal grafting had failed, the boy's mother begged to give her son one of her kidneys. Mother and son were of the same blood group (the mother's blood: B, Rh-positive, Cc-D-ee, P-positive, N; and the son's blood: B, Rh-positive, C-D-ee, P-positive, MN).

The operation was performed by two surgical groups working in adjoining rooms. The vascular anastomosis was terminolateral. An interval of 55 minutes elapsed between the clamping of the mother's vessels and the declamping of the son's vessels that followed the anastomosis. The circulation was immediately established, and the graft acquired a normal color. The surgeons then proceeded to the reestablishment of the excretory duct. Three centimeters of the subpelvic portion of the grafted ureter were introduced into the son's ureter, in which a catheter had been placed before the operation. The ureteral anastomosis seemed as perfect as the vascular anastomosis at the end of the operation.

The immediate results were remarkable. The ureteral catheter functioned even before the patient left the operating room. During the 24 hours following the operation, the transplanted kidney excreted 3.2 liters of urine. The establishment of a daily fluid and electrolyte balance made it possible to follow the functioning of the grafted kidney. The graft survived beyond the usual limits. The kidney functioned satisfactorily for 21 days and 18 hours, and the patient's blood urea level fell from 4.5 to 0.8 gm. Then a sudden anuria occurred with no warning sign except a slight increase in the volume of the grafted kidney. An exploratory operation was performed, and it was found that, in spite of perfect anatomical results, the kidney pelvis was empty of urine. The failure of this graft was not due to technical difficulties. The authors have shown that the problem of renal grafting remains unsolved.

In *Presse Médicale* of Nov. 4, 1953, the same authors described the chemical and histological aspects of the problem. The mother's kidney had developed a compensatory hypertrophy and a progressive increase of its functional volume; its urea clearance was 50 cc. per minute on the 20th postoperative day, but during the days following the operation the transplanted kidney had a urea clearance of 15 cc. per minute despite a diuresis of 2.3 cc. per minute. The authors did not find a satisfactory explanation for this. It is possible that prolonged renal ischemia was the cause of this phenomenon, but at the autopsy no important stenosis was observed at the point of the vascular sutures. The clearance of chlorine, sodium, and potassium was weak but stable, showing that tubular reabsorption was satisfactory. On the whole the functional stability of the transplanted kidney was remarkable. No sugar was found in the urine. Albumin was present during the postoperative period of hemothorax and during the five days preceding the onset of anuria (the quantitative estimation of albumin in the urine was more than 0.5 gm. per liter). The urine was sterile. The systolic pressure was about 120. The optic disk became progressively discolored, and a hemorrhage appeared in the macula lutea of the left eye.

A few hours before the functional cessation of the kidney, the urine showed no anomaly except the presence of red and a few white blood cells. A biopsy specimen showed massive infiltration of the interstitial spaces with plasmocytes and lymphocytes and circulatory modifications characterized by markedly distended blood vessels. The glomerular capillaries were ischemic. The tubular cells contained granulations and showed degeneration and desquamation in the tubular lumen without any evidence of epithelial regeneration. The autopsy showed numerous vascular extrarenal and intrarenal thromboses and infarcted and necrotic areas invaded with blood and showing massive hyalin degeneration. The authors believe an immunologic process caused death despite the fact that the graft was syngenesioplastic. A study on the first and the third day after the onset of anuria showed no evidence of a sudden conflict of antigens and antibodies, but the serum fibrin and globulin had progressively risen from 21 gm. a few days after transplantation to 32 gm. the day the grafted kidney stopped functioning and the albumin-globulin ratio changed from 1.7 to 1.03. An electrophoretic analysis showed that the increase in serum globulin was accounted for by the elective use of the gamma globulin fraction. The authors emphasize that it would be a logical hypothesis that this elective rise of gamma globulin indicated the throwing into son's circulation of specific antibodies to the graft.

CORRESPONDENCE

SUBSTITUTION OF SOYBEAN MILK FOR COW'S MILK IN ALLERGIC INFANTS

To the Editor:—There is no aspect of medicine concerning which disagreement is so common as that pertaining to food allergy. It is unquestionably true that investigation of this subject is especially difficult, and it is hard to apply the necessarily rigid controls that are required in order to obtain reliable answers. One aspect of food allergy has recently been presented by Johnstone and Glaser in THE JOURNAL and elsewhere (*J. Allergy* **24**:434 [Sept.] 1953; *J. A. M. A.* **153**:620 [Oct. 17] 1953), namely, the prevention of major allergies in children of allergic families by the avoidance of cow's milk in the first months. There is no question that this is a highly desirable objective nor is the means, the substitution of soybean "milk" for cow's milk, an entirely impractical approach. There are, however, a number of difficulties; these were described by L. W. Hill a short time ago (*J. Allergy* **24**:474 [Sept.] 1953). To the question, "Do the data as presented form a reliable basis for the conclusions reached?" we would answer with an unqualified no.

Compare the form of this experiment with that regarded by well-qualified persons (*New England J. Med.* **247**:114 [July 24] 1952) as essential in studies of this kind. The authors selected 96 infants as the experimental group. The time over which the selection was made is not stated, and it is not more than very questionably implied that these infants were to be subjects of a controlled study at the time they were selected. A second group of 65 infants, all siblings of infants in the experimental group, were selected as controls. Again it is not stated when these were selected. The reader's fear that this group may have been heavily weighted with children who were brought to the authors' attention because they already had allergic disease is reinforced by the authors' own doubts as to the suitability of this group for purposes of control and the selection by them of a second group.

The second or "nonrelated" control group of 175 subjects was selected from "the histories of 4,710 children in 1,215 allergic families." No mention is made of what measures were taken to insure a truly random sample. To choose 175 subjects from among so many must have involved careful scrutiny of each candidate, and it hardly seems conceivable that, even with the utmost effort to avoid favoring one candidate as against the other, a truly random selection could be made. Furthermore, the two control groups appear to have been selected from infants and children many of whom had or may have had allergic disease. These the authors compare with a group of children who, at the time they were selected, that is, before or immediately after birth, could have exhibited no allergic manifestations. The application of tests of statistical significance to differences between the experimental and the two control groups as carried out by the authors is obviously irrelevant if the above criticisms are valid.

An experiment of this kind requires that the criteria for selection of subjects for the experiment, whatever group they are to fall in, be set up before the selection is made and then rigidly adhered to. Furthermore, some method is needed to insure that subjects fall into the experimental or the control group in such a way as to avoid conscious selection, a common means being the assigning of alternate cases to each of the groups. Had any attempt to do this been made in this study, it would have been mentioned by the authors without any question.

It is perhaps pertinent that the authors overlooked an aspect of their data (*J. A. M. A.* **153**:620 [Oct. 17] 1953) that contradicts one of their conclusions (*J. Allergy* **24**:434 [Sept.] 1953). Among those in whom major allergies developed (a group that may be regarded as homogeneous in this respect at least), the avoidance of cow's milk in the diet during infancy did not prevent the later appearance of sensitivity to cow's milk. In roughly 50% of those in whom major allergies developed in each of the three groups (50%, or 7 out of 14, of the experimental group; 50%, or 21 out of 42, of the sibling control group; and 55%, or 50 out of 91, of the nonrelated control group), allergy to cow's milk developed. That the time of onset in the experimental group was later than in the other two was to be expected, because in the first group cow's milk was introduced later. This is evidence against the concept of immunological immaturity as a temporary phenomenon associated with the first year or two of life. The absence of any mention of this point suggests preoccupation with one interpretation to the exclusion of all others. Did such an attitude play a part in the selection of the two control groups?

The above is not meant to imply that the authors consciously biased the results. Our quarrel stems from the apparent lack of any real attempt to avoid weighting the selection of subjects in one direction or another. In problems of this kind, statisticians who, recognizing the pitfalls, would presumably be best qualified to afford themselves the luxury of dispensing with such precautions take great pains to make the selection of subjects at random because, among other things, they do not even trust themselves to do so without bias. We selected this paper for critical comment because the conclusions drawn are of great moment to everyone in the field of allergy, especially preventive allergy. If the thesis as presented by the authors is correct, it would virtually constitute malpractice to omit the steps they recommend in feeding infants born of allergic families. On the other hand, to follow the regimen recommended without reasonable assurance of benefit would hardly be justified in view of the difficulties that beset the pediatrician and the mother when cow's milk is eliminated. We feel that the entire question remains open and that the answer will require an experiment planned well in advance with all precautions taken to avoid the many pitfalls that lie in the path of the investigator.

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USE OF FOAM RUBBER FOR PROPHYLAXIS

To the Editor:—It has occurred to me that the great prevalence of allergy to inhalants (other than pollens) could be markedly reduced if manufacturers of pillows, mattresses, cushions, upholstered furniture, automobile upholstery, stuffed toys, and so forth could be persuaded to make such articles only with nonallergic stuffing such as foam rubber or other suitable nonallergenic synthetic material. In fact, if such a program were effective, the entire allergy situation in this country would be dramatically ameliorated; it would serve as a nationwide prophylactic measure. For example, when exposure to certain inhalants is materially reduced, there is a change in incidence of sensitization to those materials in our population. This is illustrated by the change in the incidence of sensitivity to silk and to rabbit hair. When I first became interested in children's allergy and began doing intradermal tests in 1933, positive skin tests and serious clinical sensitivity were commonly found to both of these antigens. Because of the frequency and severity of sensitization to rabbit hair, rabbit hair has been almost entirely eliminated by legislation or recognition of its undesirable effects. One no longer expects to find it commonly used in fur-lined slippers or as trimmings. Exposure to silk has also been markedly diminished by the invention of substitutes such as rayon and nylon and the effects on silk imports of the war with Japan. As a result, sensitization to rabbit hair and silk has practically disappeared.

If common antigens such as kapok, cotton, feathers, and animal hairs were entirely eliminated from the contents of such articles as mentioned above, it seems logical to expect that the incidence of asthma and vasomotor rhinitis, particularly, and also to some extent allergic eczemas, would be greatly reduced. Though it might be argued that higher costs of foam rubber substitutes would be prohibitive, it is likely that the extra volume of sales entailed by an enormous increase in use of the substitutes would reduce production cost and consequently the retail price.

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USE OF THE METRIC SYSTEM

To the Editor:—Although the divorce of the unit of volume, the liter, from the unit of length, the meter, has not had the benefit of publicity by columnists that fact seems to be getting around. More and more one reads medical articles in which the abbreviation for a thousandth part of a liter, a milliliter, has replaced the previously customarily used cubic centimeter. In fact, the author of a book I reviewed recently placed much emphasis on this change. With this I am in hearty accord, but in the name of consistency it would seem that what applies to the thousandth part of a liter should be extended to the millionth part of a liter, and the term microliter, μl, should be employed instead of the more cumbersome and technically incorrect cubic millimeter, cu. mm. or $mm.^3$ One now sees articles in which blood chemistry findings are recorded in milligrams per 100 ml., but the leukocyte count is reported in so many thousands per cubic millimeter (cu. mm.) rather than microliter (μl). Along the lines of this same plea for consistency, I would like to point out that the term milligrams per cent is also incorrect. If one has 100 ml. of solution containing 2 gm. of a substance, he would simply refer to it as a 2% solution and not 2 gm. %. Accordingly, if one had a solution with 200 mg. per 100 ml., he could correctly refer to it as a 0.2% solution, or 200 mg. per 100 ml., but not 200 mg. %.

I think it would be well also for the sake of consistency for one to use either the International (metric) or the Apothecary's system in any one prescription, but often one finds a prescription or order written for 50 mg. of meperidine combined with 0.01 grain (0.6 mg.) of atropine. It is amusing to find that most recent graduates of medical schools and nurses training schools know the dosages of more recently introduced drugs in milligrams but still use the Apothecary's system for older drugs. Such combinations of International and Apothecary's systems of dosage seem to work out in general practice satisfactorily but it would seem that authors of modern medical articles and textbooks should now employ the International system exclusively.

There is little doubt that the Navy Department has little or no interest in these matters, and I hardly believe the Bureau of Medicine and Surgery has much concern over them either, so the above opinions are mine and do not reflect official viewpoints of the Navy Department or the Bureau of Medicine and Surgery.

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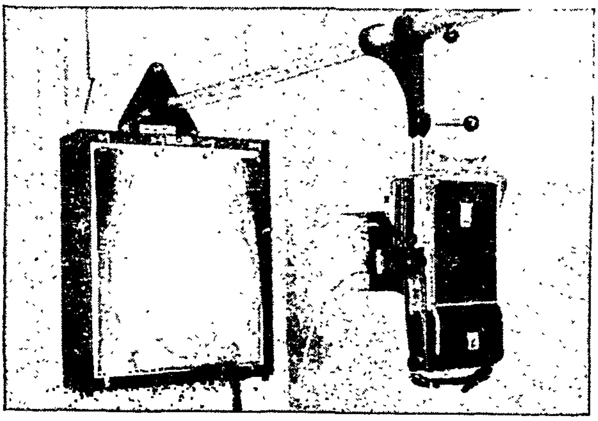
POLAROID LAND CAMERA IN MEDICINE

To the Editor:—During the past several years, we have utilized the Polaroid Land camera in our practice of urology. We believe it has many advantages. The use of photography in the office has always been a somewhat cumbersome, expensive, and difficult procedure for the average physician and, for this reason, has not been used as much as it should be. The Polaroid Land camera, however, is a simple, fast, economical, and compact means of photography. It is so simple that the average office helper can easily be shown how to manipulate it. It is capable of producing a completed print in from one to two minutes. The cost for a completed print, 3 by 4 in. (7.62 by 10.16 cm.), is approximately 20 cents. The only space required is that for a supporting arm and a camera and, if roentgenograms are being copied, a view box. The accompanying photograph shows the set-up that we have in our laboratory. It consists of a Polaroid Land camera, Pathfinder Model 110; a 38 in. (96.52 cm.) upright copying stand; a portrait lens (plus 1, 2, and 3); a 4 by 5 in. (10.16 by 12.7 cm.) ground glass; an exposure meter; and a daylight view box.

The stand may be hinged to the wall above the office view box and swung out of the way when not in use, or the stand may be utilized in an upright position if demanded by space and work requirements of the physician's office. A daylight view box is utilized since this affords better copying than incandescent light. The ground glass will insure accurate positioning, sharp focusing, and versatility in accommodating various size films. Lens to object and focusing distances are available in table form with portrait lenses, if it is inconvenient to utilize ground glass. With this camera, film identifications can be included in the photograph. The camera is positioned by either of the above methods and fixed; the roentgenogram is placed on the illuminated view box; its average density is noted by the light meter; and the appropriate F-stop and exposure time are obtained. We have found that one second at F-32 will copy approximately 90% of the roentgenograms. After the exposure has been made, the film is processed within the camera, and in from one-half to one minute the completed print is removed from the camera, waxed, and polished. It is then ready to be filed with the chart or to be sent with a letter to the referring physician. In our experience the photographs are easily readable and of great practical value in conveying information.



We have used the camera in the following ways: 1. We have reported cases to the referring physicians. Office and hospital films are copied and included in letters reporting work-up on patients to referring physicians. 2. We have copied hospital films for office records. A copy of the hospital film is inserted in the patient's office record as a reference for future treatment of the patient. 3. We have copied office and foreign films for operative use at the hospital. Photographic copies of roentgenograms of the patient for surgery the next day are made by the office helper and obviate the transporting of bulky films back and forth. 4. Office films have been copied to conserve space. Old films are reviewed, and those essential for future reference are copied and placed in the patient's record. The old films are removed from the office for storage elsewhere. 5. Representative films have been copied for use in longitudinal study. Films that are copied and in the patient's chart show progress over the years. 6. We have copied interesting films to demonstrate cases to colleagues. Interesting and challenging films may be copied and serve well in illustrating cases to colleagues, associates, interns, and resident physicians. 7. Office films have been copied and placed in hospital records of interesting cases. 8. With flood or flash lighting, patients and the interesting lesions can be photographed. 9. Graphic or printed material can be copied.

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COUNCIL ON MEDICAL EDUCATION AND HOSPITALS

ADDITIONAL INTERNSHIPS APPROVED

The listing of approved internships, published by the Council on Medical Education and Hospitals (*J. A. M. A.* 153:282-304 [Sept. 26] 1953), is supplemented by the addition of the following straight internships in pathology, which were listed in the 1952 Internship and Residency Number of THE JOURNAL, Sept. 27, 1952. The approval of these internship programs is effective until June 30, 1955.

PATHOLOGY

University of California Hospital, San Francisco, Calif.
Veterans Administration Hospital, Newington, Conn.
Grace-New Haven Community Hospital,
  New Haven Unit (University Service), New Haven, Conn.
Emory University Hospital, Emory University, Ga.
Michael Reese Hospital, Chicago
Baltimore City Hospital, Baltimore
Johns Hopkins Hospital, Baltimore
Beth Israel Hospital, Boston
Boston City Hospital, Boston
Children's Medical Center, Boston
Massachusetts Memorial Hospital, Boston
Peter Bent Brigham Hospital, Boston
Holyoke Hospital, Holyoke, Mass.
Providence Hospital, Detroit
Barnes Hospital, St. Louis
Jersey City Hospital, Jersey City, N. J.
Kings County Hospital, Brooklyn
Methodist Hospital, Brooklyn
Queens General Hospital, Jamaica, N. Y.
Bellevue Hospital Center
  Division III—New York University College of Medicine, New York City
New York City Hospital, New York City
New York Hospital, New York City
Presbyterian Hospital, New York City
St. Luke's Hospital, New York City
Genesee Hospital, Rochester, N. Y.
Strong Memorial-Rochester Municipal Hospitals, Rochester, N. Y.
Duke Hospital, Durham, N. C.
North Carolina Baptist Hospital, Winston-Salem, N. C.
St. John's Hospital, Tulsa, Okla.
Good Samaritan Hospital, Portland, Ore.
Vanderbilt University Hospital, Nashville, Tenn.
Parkland Hospital, Dallas, Texas

COUNCIL ON MEDICAL SERVICE

This article is the first in a series prepared by the Committee on Federal Medical Services of the Council on Medical Service to present the American Medical Association position on medical care for veterans with non-service-connected disabilities and to outline the basic reasons for that stand. Subsequent articles will provide the facts and statistics that lie behind the A. M. A. policy. Others will consist of excerpts from addresses delivered by local physicians at the regional conferences sponsored by the Committee. The entire series of articles, when concluded, will be reproduced in booklet form and made available for distribution.

LOUIS M. ORR, M.D., *Chairman,*
Committee on Federal Medical Services.

A. M. A. POLICY ON VETERANS' MEDICAL CARE

At the 1953 Annual Meeting of the American Medical Association last June in New York City, the House of Delegates unanimously adopted a position urging that Veterans Administration hospital and medical care for veterans with non-service-connected disabilities be discontinued except in the case of war veterans with tuberculosis or psychiatric or neurological disorders when the veteran is unable to afford such care and where local facilities are inadequate.

The House of Delegates reaffirmed that policy in December, 1953, at the Clinical Meeting in St. Louis and also commended the Council on Medical Service and its Committee on Federal Medical Services for the intraprofessional educational program that has been under way since September. Under that program, regional conferences have been held in New York, Washington, D. C., Atlanta, Ga., and Dallas, Texas, to familiarize the state medical societies with the A. M. A. position and the reasons on which it is based. Five more regional conferences are scheduled for Denver, Portland, Ore., Omaha, Indianapolis, and Boston in February and March, 1954.

At the St. Louis meeting the House of Delegates also adopted a recommendation urging that each state medical society "take formal action approving the policy statement on medical care for veterans with non-service-connected disabilities as adopted by the House in June, 1953."

URGING OF NEW LEGISLATION

The House action last June constituted a reaffirmation and final approval of the following recommendation originally presented at the December, 1952, Clinical Session in Denver by a Special Committee on Federal Medical Services:

"Your committee recommends with respect to the provision of medical care and hospitalization benefits for veterans in Veterans Administration and other federal hospitals that new legislation be enacted limiting such care to the following two categories:

"(a) Veterans with peacetime or wartime service whose disabilities or diseases are service-incurred or aggravated, and

"(b) Within the limits of existing facilities to veterans with wartime service suffering from tuberculosis or psychiatric or neurological disorders of non-service-connected origin, who are unable to defray the expenses of necessary hospitalization.

"Your committee recommends that the provision of medical care and hospitalization in Veterans Administration hospitals for the remaining groups of veterans with non-service-connected disabilities be discontinued and that the responsibility for the care of such veterans revert to the individual and the community, where it rightfully belongs."

APPROVAL OF SERVICE-CONNECTED CARE

It should be clearly understood, and emphasized over and over again, that the House of Delegates did not in any way suggest any limitation or impairment of the hospital and medical care benefits now provided by the Veterans Administration to veterans who are ill or handicapped as a result of their military service. The reference committee report adopted by the House expressed complete accord with the present program of hospital and medical care for veterans with service-connected ailments.

It also should be pointed out that the exception involving non-service-connected cases of tuberculosis and neuropsychiatric disorders is made as a temporary recommendation because some local facilities are at present inadequate to handle all such patients. The House of Delegates suggested that the Congress reanalyze the entire question of whether such patients are a local or federal responsibility, adding:

"The rapidly expanding veteran population and the need for facilities for the remainder of our citizens afflicted with these diseases suggests that community facilities must be developed under state or local administration for the benefit of all. Preferential treatment for veterans with these non-service-connected disabilities cannot be continued indefinitely, in view of its detrimental effect on the health and the economy of the entire nation."

THE BASIC QUESTION

In summing up the over-all approach of the A. M. A. to the whole issue of veterans' medical care, the House of Delegates adopted this important statement:

"It appears that the principal confusion in this matter emanates from a failure to understand just what the basic question is. It is the belief of your committee that the medical profession must concern itself not with the number of 'chiselers' in Veterans Administration hospitals nor with the efficacy of the Veterans Administration in the administration of enabling legislation but rather with the broad question of whether such legislation is sound, whether the federal government should continue to engage in a gigantic medical care program in competition with private medical institutions and whether the ever-increasing cost of such a program is a proper burden to impose on the taxpayers of the country. A consideration of this problem must of course be predicated upon a concern for the health of the entire population and not just a particular segment."

In other words, despite the fact that there may be abuse of VA medical benefits by veterans who are able to pay for their own care, and while there may be waste and duplication in the VA hospital construction program, the A. M. A. does not feel that those are the basic issues at hand. The A. M. A. has predicated its stand on the moral, social, and economic principles involved in the problem—fundamental principles that concern not just veterans but all Americans.

SIX REASONS FOR POLICY

Those principles, affecting the future health, economic welfare, and national philosophy of the entire country, may be summarized as follows:

1. It is morally wrong to have two classes of citizens in this country—veterans, who can turn to the federal government for free hospital and medical care whenever they incur illness or injury in civilian life, and nonveterans, who must continue to shoulder personal responsibility for their own health care.

2. It is both morally and economically wrong for one group, the nonveterans, to pay their own medical expenses and also be forced to pay taxes that support a huge federal medical program operated mainly for the special benefit of the other group, the veterans who emerged from military service as healthy, able-bodied individuals.

3. Unless the basic purpose and scope of the VA medical program are changed—in accord with the original intent of that program—the inevitable increase in its size and cost will, in the future, impose a terrific financial burden on the nation's taxpayers, veteran and nonveteran alike, and on the country's entire economic structure.

4. The continued expansion of the VA hospital and medical program has and will continue to siphon off funds, facilities, physicians, interns, residents, nurses, and technicians required to serve the health needs of the population as a whole, including the wives and children of veterans. This competition will aggravate artificial shortages in civilian medical personnel and will tend to increase the cost of hospital and medical care.

5. Despite the fact that the American people very recently have demonstrated a strong opposition to any form of socialized medicine, they will be led into it indirectly if the VA is allowed to expand its already-vast program of tax-paid medical care for a large and growing proportion of our population.

6. The basic consideration in the whole issue is the proper division of health responsibility among the individual, the community, the state, and the federal government. The A. M. A. holds that responsibility for personal health care rests first with the individual and then, if he is indigent, with the community or the state. Only in the case of veterans with service-connected disabilities—ailments or injuries caused or aggravated by their military service—is there a clear, undeniable federal obligation, and that obligation should be fulfilled by providing the finest possible hospital and medical care.

FUTURE PROBLEMS

The foregoing principles are of paramount importance because only a change in the present philosophy behind the veterans' medical care program will solve the tremendous problem that looms ahead. During the past 30 years the VA program has been liberalized and expanded far beyond its original purpose, which was to provide care for men who were ill or disabled as a result of military service, and that program in itself already is huge and costly. The future problem, however, far overshadows that of the past or present, for our veteran population today is four times as large as it was after World War I, it is increasing annually, it will continue to increase in the foreseeable future, and its members will be growing older, requiring more care as the years roll by.

Continuation of the present policy, applied to a large, growing and aging veteran population, will have a terrific impact not only on the taxpayers' pocketbooks and on our civilian medical system but also on the course of events in a nation already debating the broad question of individual initiative versus government-provided security.

BUSINESS PRACTICE

UNPAID BILLS

The following material is based on a public relations manual issued by the Public Relations Department of the American Medical Association.—ED.

A physician should make an earnest attempt to collect fees owed him for several reasons. If he is to meet his expenses, he must be paid for his services. Furthermore, it is not fair to his honest patients if he makes no attempt to collect from nonpaying patients. Abandoning accounts with no follow-up encourages "deadbeats." Their philosophy is: "Doc always writes off about 25% of what his patients owe him—so why should I pay?" When there is no collection follow-up, honest patients indirectly subsidize the medical care of many who could pay but do not. A physician often loses the good will of patients by not collecting from them. Human nature operates in a strange fashion. A man who owes the doctor money but is not prodded gently into payment often will stay away from the doctor's office in embarrassment—or change doctors. Noncollection of medical bills also may imply guilt. A patient may infer that the physician believed that he gave inadequate or improper care, and a malpractice suit may result. Conscientious patients appreciate being reminded when they overlook medical bills. Most patients are honest and will pay their debts when approached in a friendly, understanding manner.

In view of these facts, it is unwise for a physician, from a public relations as well as a business standpoint, to leave accounts on his books. One medical man says, "Cancel or collect—if you can't collect with appeals to decency and humor, then write off the bills." Unfortunately, many physicians do not even add up the bills owed them. According to a recent survey, the average doctor in 1952 collected about 85% of what was owed to him as compared with 88% in 1948. Although a physician should do his best to collect from his patients, he should not let mercenary business methods taint the medical profession. High pressure collection techniques have no place in the medical realm. He should not lose the personal touch. If he tries to understand his patients' reasons for nonpayment, he is in a better frame of mind to help the honest in this group work out satisfactory arrangements, whether it be cutting or canceling fees or working out payment plans. Medical bills are peculiar in that persons must pay for an illness or operation they did not want in the first place. Patients may subconsciously resent medical bills. Also, competition for the patient's dollar sets in during medical treatment, and the decision to pay is often influenced by the urgency of other debts and desires. A patient's gratitude for services rendered often fades fast. It is wise to follow collections systematically, because it has been proved that, the longer the time lapse between billing and follow-up, the less likely is collection.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

A.M.A. Arch. Internal Medicine, Chicago

92:455-602 (Oct.) 1953

*Treatment of Staphylococcic Infections with Erythromycin. W. M. M. Kirby, T. Forland and F. M. Maple.—p. 464.
Effects of Cortisone and Corticotropin on Prolonged Bleeding Time: Treatment in Certain Hemorrhagic States (Pseudohemophilia). B. M. Jacobson.—p. 471.
*Studies on Headache: Evidence of Tissue Damage and Changes in Pain Sensitivity in Subjects with Vascular Headaches of Migraine Type. H. G. Wolff, M. M. Tunis and H. Goodell.—p. 478.
Chlortetracycline (Aureomycin) in Prevention of Bacteremia Following Oral Surgery: Attempt to Prevent Subacute Endocarditis in Patients with Heart Disease. O. Roth, G. M. Montano, J. A. Piccolo and others.—p. 485.
Hypergammaglobulinemia in Pulmonary Tuberculosis. F. Schaffner, G. C. Turner, D. E. Eshbaugh and others.—p. 490.
*Periodic Disease: Observations on Old Cases and Report of New Cases and of Therapeutic Trials. H. A. Reimann.—p. 494.
Transient Esophageal Varices in Hepatic Cirrhosis. H. D. Bennett, C. Lorentzen and L. A. Baker.—p. 507.
Syndrome of Hemangioma and Thrombocytopenic Purpura in Infants. J. Weissman and H. J. Tagnon.—p. 523.
Clinical Observations on Fatty Liver. C. M. Leevy, M. R. Zinke, T. J. White and A. M. Gnassi.—p. 527.
Diabetes Insipidus in Pregnancy. S. C. Carfagno, T. M. Durant and C. R. Shuman.—p. 542.
Some Studies of Mechanism of Intractable Edema. A. A. Câmara, H. K. Schoch, A. Reimer and L. H. Newburgh.—p. 554.
Active Chronic Pulmonary Histoplasmosis. W. D. Sutliff, F. Hughes, E. Ulrich and L. L. Burkett.—p. 571.

Treatment of Staphylococcic Infections with Erythromycin.—Kirby and associates assert that in hospitalized patients approximately 70% of staphylococcic infections are caused by penicillin-resistant organisms and 40 to 60% are resistant to chlortetracycline (Aureomycin) and oxytetracycline. Bacitracin and chloramphenicol must be administered with caution because of possible toxic reactions. In vitro studies indicate that a new antibiotic, erythromycin, should be highly effective against staphylococcic infections. The authors observed the effects of erythromycin therapy in 34 patients with staphylococcic infections. Initial improvement occurred in 23 patients with soft tissue infections. In 17 the infection was eradicated within two weeks, while up to two months was required for healing in 3 others. In three patients relapses occurred when treatment was stopped. Of 10 patients with chronic osteomyelitis, only 1 failed to respond to erythromycin therapy. Acute flare-ups were readily controlled, and the chronic infection was arrested or eradicated in eight patients after saucerization of bone and removal of devitalized tissues. In two patients, one with staphylococcic pneumonia secondary to pneumococcic pneumonia and the other with peritonitis, cultures became overgrown with Proteus vulgaris, and in one this organism was cultured from the blood stream. The patient with peritonitis eventually recovered, and the one with pneumonia died with multiple staphylococcic abscesses throughout his body. Prior to therapy, all 34 strains of staphylococci were highly sensitive to erythromycin and were resistant to penicillin, chlortetracycline, and oxytetracycline. In one patient with chronic osteomyelitis of the spine, erythromycin-resistant organisms developed after six weeks of therapy. However, in three patients with soft tissue infections, the organisms remained sensitive after three weeks of therapy. In the other cases follow-up sensitivity tests were not possible. Erythromycin was well tolerated when given orally. Serum concentrations of the antibiotic were remarkably high and well sustained.

Vascular Headaches of Migraine Type.—To ascertain whether the cranial vascular functions of subjects with vascular headache are different from those of subjects without headache, cranial artery pulse wave contour records were obtained two to five times weekly on 40 subjects with vascular headaches of the migraine type. These were taken both during headache and in headache-free phases over a period of one to six months. Such records were contrasted with records similarly taken on 10 subjects who never or rarely had headaches. It became evident that even during headache-free phases the person subject to vascular headaches exhibits significantly greater variation in the contractile state of certain parts of the cranial vascular tree than does a person not subject to headache. The striking modifications in vascular function characteristic of the headache attack itself merely punctuate changes that more or less continuously exist in persons subject to vascular headache. The cranial arteries showed predominantly distension and signs of edema. In the bulbar conjunctivas the arterioles, capillaries, and venules, examined by means of a slit lamp in the eyes of 20 subjects during headache attacks, exhibited on the headache side a greatly increased diameter and tortuosity. However, in contrast with analogous vessels on the contralateral side, the blood flow rate was reduced as much as fivefold. Tissues adjacent to painful and tender vascular structures were tender on palpation. Nineteen spontaneous hematomas were observed in 11 patients during 19 attacks of migraine. They were usually localized in the tissues adjacent to the frontal branch of the involved temporal artery and made their appearance 10 to 60 hours after the onset of a severe headache attack. The hematomas were tender on palpation and ecchymotic in appearance and persisted for a few days to over a week. Subjects with headaches and who did not have hematomas were found to have a lowered threshold for deep pain about the extracranial arteries and adjacent tissues as an accompaniment of the headache. Neither lowered threshold alone nor moderate vasodilatation, per se, caused headache, yet alteration in the contractile state of the cranial arteries was an essential requirement. Further, those persons subject to vascular headache exhibited a heightened variability in the contractile state of specific portions of the cranial vascular tree, which was especially notable during periods of frequent attacks. At such time, after a period of conspicuous variability in contractile state of cranial arteries, there followed a phase of vasoconstriction succeeded by dilatation, intramural vascular edema, and lowered pain threshold. Under these circumstances, vasodilatation becomes painful, and the headache attack ensues.

Periodic Disease.—Reimann says that in a previous publication the name periodic disease was proposed to cover an assortment of disorders of unknown cause that have in common short episodes of disease recurring over many years without affecting the general health. They were named according to their outstanding clinical feature, respectively, as periodic fever, periodic abdominalgia, periodic arthralgia, and periodic neutropenia. Certain cases of anaphylactoid (Schönlein-Henoch) purpura and of angioneurotic (Quincke's) edema were included with the new names of periodic purpura and periodic edema, but the place of periodic paralysis, the cyclic vomiting of children, and others was uncertain. After a review of the subject was published, new cases of the types already described, some of them with unusual features, and examples of other recurrent disorders came to Reimann's attention. They were collected from correspondence with physicians, from published reports, and from letters and visits

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Titles marked with an asterisk (*) are abstracted.

from patients who read a comment about this subject in a popular periodical. This paper describes further observations on previously described cases and therapeutic attempts. A number of examples of recurrent dermal, respiratory, and neurological disorders and periodic sialorrhea were added to the list. No progress was made in discovering the cause of periodic disease, which seems to represent an inherent rhythm that provokes disturbances of widely different organs or systems. Familial tendencies to homologous periodic disorders were noted. In other cases, the symptoms shifted from one system to another. Arthralgia replaced, coincided, or alternated with abdominalgia; stethalgia changed to abdominalgia. Except for symptomatic relief produced by salicylate compounds in some patients, therapy usually is unsuccessful. Suppression of episodes was reported in one case by the use of paraaminobenzoic acid. Corticotropin gave temporary relief from symptoms in a case of periodic purpura but had no effect on periodic abdominalgia. Cortisone in one case suppressed periodic fever for three months after therapy was stopped. The symptoms in several patients with periodic neutropenia were relieved after splenectomy, but the neutropenic rhythm was unchanged.

A.M.A. Arch. Otolaryngology, Chicago

58:377-520 (Oct.) 1953

Techniques for Study of Cochlear Function and Pathology in Experimental Animals: Development of Anatomical Frequency Scale for Cat. H. F. Schuknecht.—p. 377.
Ultrasonics and Otosclerosis: New Concept of Its Origin. Z. Angeluscheff and L. L. Coleman.—p. 398.
Repair of Central Perforations of Tympanic Membrane. E. L. Derlacki. —p. 405.
Laryngectomized Speech. H. E. Rickenberg.—p. 421.
Importance of Bacteriology in Ear Infections. W. K. Wright and F. R. Guilford.—p. 425.
Congenital Atresia of Posterior Nares. M. C. Baker.—p. 431.
Teratoma of Larynx. L. F. Johnson and M. S. Strong.—p. 435.
Fibrosarcoma of Larynx. G. K. Dwyer.—p. 442.
Bronchoesophagology. F. J. Putney, J. J. O'Keefe, L. W. McStravog and W. H. Baltzel.—p. 448.

A.M.A. Arch. of Pathology, Chicago

56:333-436 (Oct.) 1953

Effect of Hypervitaminosis A on Testes of Rat. C. L. Maddock, J. Cohen and S. B. Wolbach.—p. 333.
*Germinal Nature of Teratoid Tumors of Thymus. W. S. Pugsley and R. L. Carleton.—p. 341.
Necrotizing Nephrosis in Rat Following Administration of Carbon Tetrachloride. R. B. Jennings and W. M. Kearns Jr.—p. 348.
Histochemical Studies in Cytomegalic Inclusion Disease. J. Dyckman and J. Bellamy.—p. 360.
Rhabdomyosarcoma of Vulva and Vagina. W. B. Ober, R. E. Palmer and F. J. Glassy.—p. 364.
Inhibition of Maturation of Duck Erythrocytes by Sodium Selenite: Counteraction of This Effect by Cysteine. R. H. Rigdon, G. Crass and K. P. McConnell.—p. 374.
Free Cysts of Peritoneal Space: Report of Four Examples Disclosed at Operation or Autopsy. C. G. Tedeschi and M. M. Helpern.—p. 386.
Coexisting Congenital Stenoses of Aortic and Pulmonic Ostia. G. W. Richter.—p. 392.
Pathology of Epidemic Typhus: Report of Fatal Cases Studied by United States of America Typhus Commission in Cairo, Egypt, During 1943-1945. Prepared by the Committee on Pathology Division of Medical Sciences, National Research Council with Collaboration of Armed Forces Institute of Pathology.—p. 397.

Germinal Nature of Teratoid Tumors of Thymus.—In two patients who died of teratoid tumors of the mediastinum, the primary tumor was found in the region of the thymus. The first of the two patients, a boy of 16, died of metastases from a teratocarcinoma of the mediastinum. By multiple block serial sectioning of the testes a gonadal primary tumor was excluded, and the mediastinal growth was found to originate in, or adjacent to, the thymus. Although the presence of trophoblastic tissue characterized both the primary tumor and the metastases, a nodule of germinomatous tissue was found in immediate proximity to thymic tissue. The second patient was a man of 37 who died with generalized chorioepitheliomatosis apparently originating in the mediastinum. The testes were eliminated as a possible primary site by the multiple block technique. The presumably primary mediastinal growth arose in, or adjacent to, the thymus. These two cases prove that certain mediastinal teratoid tumors are of extragenital origin, that they may arise in the thymus, and that the teratomas and chorioepitheliomas of the thymus may evolve, as in the comparable tumors of the testis, from a tumor of primordial germ cells.

American Journal of Ophthalmology, Chicago

36:1189-1332 (Sept.) 1953. **Partial Index**

Subhyaloid Hemorrhage Following Subarachnoid Hemorrhage: Report of Two Cases. F. C. Cordes.—p. 1192.
Metastatic Malignant Melanoma of Uvea: Case Report. D. Vail.—p. 1199.
Intraocular Biopsy: An Evaluation. T. E. Sanders.—p. 1204.
Foveal Co-Ordination. A. D. Ruedemann.—p. 1220.
Technique for Total Biopsy of Neoplasms of Iris: Report of Case of Excision of Leiomyoma. D. B. Kirby.—p. 1225.
Reading Difficulty (Paralexia) from Impairment of Visuo-Oculogyric Adjustment. D. J. Lyle.—p. 1234.
Present Concepts of Surgery of Superior Oblique Muscle. W. P. McGuire —p. 1237.
Senile Changes in Crystalline Lens: What Is the Proportion of Real Senile Cataracts in Old Patients on Whom Lens-Extraction Operation is Performed? M. E. Alvaro.—p. 1241.
Observations Concerning Cataract Surgery. E. L. Goar.—p. 1245.
Use of Peritoneum as Substitute for Conjunctiva in Plastic Surgery: Preliminary Report. J. H. Allen.—p. 1249.
Iridectomy for Drawn-Up Pupil. P. A. Chandler.—p. 1253.
Akinesia of Orbicularis. W. S. Atkinson.—p. 1255.
Prevention of Infection in Ophthalmic Surgery: Protection of Instruments from Dust-Borne Contamination and Sterilization of Certain Solutions by Ultraviolet Radiation. M. H. Post.—p. 1258.
Bilateral External Rectus Paralysis with Bilateral Muscle Transplantation. R. S. Riffenburgh.—p. 1265.
Tendon-Transplanting Operation. H. R. Hildreth.—p. 1267.
Hypertensive Response of Human Eye to Anterior Chamber Puncture. P. C. Kronfeld.—p. 1271.
Variations in Normal Human Corneal Endothelium: Preliminary Report of Pathologic Human Corneal Endothelium. A. R. Irvine and A. R. Irvine Jr.—p. 1279.
Malignant Exophthalmos. A. E. Braley.—p. 1286.

American Journal of Public Health, New York

43:1077-1246 (Sept.) 1953

Great Pioneers of Public Health in America 1610-1925. W. G. Smillie. —p. 1077.
Observations on Outbreak of Infectious Hepatitis in Baltimore During 1951. A. M. Lilienfeld, I. D. J. Bross and P. E. Sartwell.—p. 1085.
*Epidemiology of Viral Hepatitis A. J. Stokes Jr.—p. 1097.
Administrative Problems in Use of Poliomyelitis Immune Globulin. J. Ipsen Jr.—p. 1101.
Use of Tergitol-7 Triphenyl Tetrazolium Chloride Agar as Coliform Confirmatory Medium in Routine Sanitary Water Analysis. W. L. Kulp, C. Mascoli and O. Tavshanjian.—p. 1111.
Team Approach to Better Environment: Relation of City Planning to Public Health. A. Cousineau.—p. 1114.
Id.: Health Department Role. E. R. Krumbiegel.—p. 1119.
A Serviço in Action. H. W. Lundy.—p. 1125.
Educational Program for Nursing Supervisors in Maternity Hospitals: Physician's Standpoint. G. M. Byington.—p. 1129.
Id.: Nurse's Standpoint. I. Nelson.—p. 1132.
Role of Medical Record Librarian in Public Health Statistics: Summary of Panel Discussion. W. Haenszel.—p. 1135.
Investigating Narcotic Addiction in School Children. H. Jacobziner. —p. 1138.
Method for Evaluating Effectiveness of Health Education Literature. B. G. Greenberg, M. E. Harris, C. F. MacKinnon and S. S. Chipman. —p. 1147.
Rehabilitation Program for Dentally Physically Handicapped Child. A. Bushel and D. B. Ast.—p. 1156.
Statistical Analysis as Basis for Control in Fee-for-Service Plans. C. A. Metzner, S. J. Axelrod and J. H. Sloss.—p. 1162.

Epidemiology of Viral Hepatitis A.—From Jan. 1, 1946, to Nov. 7, 1948, jaundice developed in 42 of 144 of the new student nurses soon after they were admitted to a Chicago orphanage for training. The injection of Red Cross gamma globulin, 0.06 ml. per pound of body weight, in all new student nurses was instituted as a palliative and diagnostic measure one to one and one-half months of their admission after Nov. 7, 1948. For the succeeding 10 months up to Sept. 1, 1949, no jaundice occurred in the 36 nurses admitted during this period, except in one who received the globulin only two days preceding the onset. In her, jaundice confirmed the continuing endemic nature of the disease. Liver function tests revealed over 40 infants and children with evidence of hepatitis without jaundice—only one case of jaundice—in the last six months of 1949. In order to obtain further information and to eradicate the source of the endemic disease, injections of globulin were stopped on Sept. 1, 1949, and 20 new student nurses were admitted. Within two months of their admission, hepatitis developed in nine. Six of these had jaundice, while of 35 student nurses injected 10 months before, only 1 contracted jaundice. Stool preparations from two children with symptoms and positive reactions to liver function tests characteristic of hepatitis without jaundice for 5 and 15 months, respectively, were administered orally to two groups of volunteers. In each group one volunteer contracted hepatitis with jaundice, each with a short incubation period of a little over 20 days, thus demonstrating the presence of at least two chronically active cases of hepatitis A or of intestinal carriers of this disease. Investigation of sources revealed a lack of proper techniques of the nurses in washing their hands between changing diapers. When instructions on such techniques were faithfully followed, no jaundice was contracted. No cases occurred from December, 1949, to the present, despite the discontinuance of gamma globulin and a full admission rate for student nurses. This striking outbreak strongly supports the following epidemiological points: 1. Hepatitis A has a fecal-oral type of spread, whether endemic or epidemic, and this includes water, food, and milk-borne epidemics. 2. Epidemics of hepatitis A have a mean incubation period of 20 to 35 days. 3. Chronically active cases may develop, and the patient may carry hepatitis virus A in his stools as demonstrated at the Chicago orphanage. 4. Gamma globulin in doses as small as 0.01 ml. per pound of body weight is effective at least as a temporary protective agent against hepatitis A and will stop the occurrence of hepatitis A in exposed persons who are injected more than about seven days before the expected time of onset. The passive immunity in many cases, as apparent in a considerable portion of the 35 nurses injected, may be changed into a passive-active immunity if the person injected with globulin continues at risk during his waning, passive immunity. 5. The severity of hepatitis A in general is reciprocally related to age, particularly in the youngest age groups between birth and four years when jaundice is a rare complication, as clearly demonstrated in the Chicago orphanage. The skin test recently developed for hepatitis A suggests the possibility that A may be a virus of uniform antigenic properties (similar to measles or mumps viruses) that produces permanent immunity.

American Review of Tuberculosis, New York

68:505-666 (Oct.) 1953

*Scalene Node Biopsy. L. M. Shefts, A. A. Terrill and H. Swindell. —p. 505.
Study of Effects of Isoniazid on Emotions of Tuberculous Patients. T. H. Lorenz, G. Calden and J. L. Ousley.—p. 523.
Isoniazid and Isoniazid-Para-Aminosalicylic Acid in Treatment of Tuberculous Sinuses and Fistulas. J. D. Murphy and T. Okano.—p. 535.
Effects of an Intermittent Dosage Schedule of Viomycin on Renal Function and on Plasma Electrolytes. J. H. Moyer, P. O. Jones, R. V. Ford and others.—p. 541.
Virulence of Tubercle Bacilli Recovered from Patients Treated with Isoniazid. W. Steenken Jr. and E. Wolinsky.—p. 548.
Certain Nonpathogenic Mycobacteria as Source of Error in Diagnosis and Drug-Susceptibility Tests. D. Yegian and V. Budd.—p. 557.
Studies on Mode of Action of Lysozyme on Mycobacteria. Q. N. Myrvik, R. S. Weiser and M. C. Kelly.—p. 564.
Effect of Combined Therapy with Isoniazid and Streptomycin on Experimental Tuberculosis of Guinea Pigs. A. G. Karlson and W. H. Feldman.—p. 575.
Use of Guinea Pig Omentum as an Index of Effectiveness of Antimicrobials in Experimental Tuberculosis. E. S. Han, R. G. Kelly and C. E. Woodruff.—p. 583.
Serum Glycoprotein Concentrations in Experimental Tuberculosis of Guinea Pigs. H. E. Weimer and J. R. Moshin.—p. 594.
Diffuse Interstitial Fibrosis of Lungs. M. M. Schechter.—p. 603.
Coexistent Pulmonary Tuberculosis and Systemic Blastomycosis: Report of Case Successfully Treated with Streptomycin, Para-Aminosalicylic Acid, and Stilbamidine. T. C. Black and H. M. Wilson.—p. 615.

Scalene Node Biopsy.—Since the lymph nodes anterior to the scalenus anticus muscle are connected to the mediastinal nodes, scalene node biopsy is indicated in certain cases of intrathoracic disease in which it is advisable to know the contents of the mediastinal nodes. The biopsy is a simple operation, performed with the patient under local anesthesia, that avoids entrance of the thorax. Two hundred five biopsies, 17 of which were done bilaterally, were performed on 187 patients in whom a diagnosis had not been indicated by any previously applied nonsurgical method in general use. In 67 (35.8%) of the patients, there was evidence of intrathoracic disease; Boeck's sarcoid was present in 38, bronchogenic carcinoma in 13 (9 undifferentiated and 4 adenocarcinoma), tuberculosis in 8, lymphosarcoma in 2, Hodgkin's disease in 2, histoplasmosis in 1, and metastases to the lung in 3 (carcinoma of the pancreas and cervix and hypernephroma).

Angiology, Baltimore

4:397-456 (Oct.) 1953

Use of Dioxyline Phosphate in Peripheral Vascular Disorders. R. A. Deterling Jr.—p. 397.
Incidence of Palpable Radial, Ulnar and Temporal Pulsations in 1,000 Individuals. J. J. Silverman and M. Trudeau.—p. 406.
Intra-Aortic Procaine Injection in Aortography. W. E. Goodwin and R. C. Walter.—p. 410.
Sequelae of Thrombophlebitis. J. C. Luke.—p. 413.
Use of Gelfoam for Support as Well as Hemostasis in Vascular Surgery. E. S. Hurwitt.—p. 418.
Coarctation of Abdominal Aorta—Graft of Preserved Aorta. A. R. Albanese and A. A. Lazzarini.—p. 429.
Some Factors Influencing "Pulmonary Capillary" Pressure Curves Obtained by Means of Cardiac Catheter. F. D. Gray Jr. and F. G. Gray.—p. 436.
Ballistocardiographic Findings in Case of Coarctation of Aorta with Bicuspid Aortic Valve and Aortic Insufficiency. M. Rodstein, B. Burack and D. Young.—p. 446.

Annals of Internal Medicine, Lancaster, Pa.

39:675-990 (Oct.) 1953

Aseptic Meningitis, a Disease of Diverse Etiology: Clinical and Etiologic Studies on 854 Cases. C. V. Adair, R. L. Gauld and J. E. Smadel. —p. 675.
*Relationship of Adiposity to Serum Cholesterol and Lipoprotein Levels and Their Modification by Dietary Means. W. J. Walker.—p. 705.
Management of Cerebral Vascular Accidents. J. M. Nielsen.—p. 717.
Treatment of Hemochromatosis by Massive Venesection. W. D. Davis Jr. and W. R. Arrowsmith.—p. 723.
*Intra-Articular Hydrocortisone in Treatment of Arthritis. J. L. Hollander. —p. 735.
Gastroduodenal Hemorrhage: Difficulties in Recognition of Lesions at Operation by Palpation and Inspection. E. M. Rappaport.—p. 747.
Rheumatism and Arthritis: Review of American and English Literature of Recent Years; (Tenth Rheumatism Review): Part II. W. D. Robinson, E. W. Boland, J. J. Bunim and others.—p. 757.

Relationship of Adiposity to Serum Cholesterol and Lipoprotein Levels.—The relationship between the degree of obesity and levels of serum cholesterol and lipoproteins was studied in 465 men and 535 women between the ages of 30 and 60 years selected at random and thus presenting a cross section of the American population and presumably eating a representative American diet. Using Metropolitan Life Insurance tables as an index, the expected normal weight for height was recorded and the per cent of deviation from normal calculated. Weight deviation then was charted against calculated mean cholesterol levels and against calculated mean S_f 12-20 lipoprotein fraction levels. Results indicated that there is in general a direct relationship between state of nutrition and level of S_f 12-20 lipoprotein and a definite, though less pronounced correlation with serum cholesterol. This relationship is more pronounced in men than in women. Premenopausal women seem to have lower serum cholesterol and S_f 12-20 levels than men of comparable age and state of nutrition or than postmenopausal women. The influence of weight loss on the serum cholesterol and several classes of lipoproteins then was investigated in 11 women and 28 men between the ages of 29 and 68, most of whom were on a diet low in cholesterol because of known cardiovascular disease. With the onset of caloric restriction, they were given a diet containing approximately 1,000 calories, with 100 gm. of protein, 20 gm. of fat, and 100 gm. of carbohydrate; this included the mandatory daily ingestion of two eggs to insure an intake of at least 600 mg. cholesterol in addition to that usually contained in such a reducing diet. They were thus on a diet containing more than their accustomed cholesterol intake, and most of them lost weight rapidly enough to ensure the metabolism of considerable endogenous fat. During the weight maintenance period that followed, the caloric intake was liberalized individually by additions to the carbohydrate and protein components of the diet. Determinations of total serum cholesterol, S_f 12-20, S_f 21-35, S_f 35-100 lipoprotein were made before starting the dietary regimen, at two or three week intervals during the weight losing period, and at one to two month intervals after the weight had become stabilized at a lower level. Results indicated that weight reduction without dietary cholesterol restriction is associated with significant reduction of the serum S_f 12-20, S_f 21-35, and S_f 35-100 levels in patients whose initial levels were elevated. There was a less significant fall in total serum cholesterol levels. The results of the author's study do not conclusively exclude dietary fat or cholesterol as important causal factors in the genesis of atherosclerosis, but they do suggest that in humans total caloric intake may be a much more important factor. If, as seems likely, elevated serum lipid levels contribute to the development of atherosclerosis, then weight reduction is proper treatment for this disease. At present it is probably the most effective preventive and therapeutic measure available.

Hydrocortisone Given Intra-Articularly for Arthritis.—A total of 8,693 intrasynovial injections of hydrocortisone were given to 852 patients with various rheumatic diseases. The knee joint was easily injected from the medial side, just dorsal to the patella; aspiration of the ankle joint was most readily performed from an anteromedial approach; the elbow joint was usually injected laterally, the shoulder joint anteriorly, the wrist and finger joints dorsally, and the hip anterolaterally. Arthritis of spinal joints is not amenable to this form of therapy for anatomic reasons. For hydrocortisone to be effective locally, it is imperative that it be injected into, but not near, the synovial space where it can bathe the entire inflamed surface. Of the 852 patients, 710 (83%) obtained demonstrable local improvement persisting for from three days to many weeks, with gradual relapse of the local inflammation to its pretreatment state. Repeated injections into the same joint at varying intervals reproduced, or sometimes even exceeded, the degree and duration of the initial alleviation. Occasional loss of beneficial effect after succeeding injections was observed also, but in less than 5% of the cases. Of 547 patients followed up for at least one year, 106 obtained lasting relief of symptoms and signs of the local inflammation for at least one year since last injected; 296 had temporary relief, but repeated injections maintained the relief for more than a year. In 142 (17%) therapy failed. Adverse effects were rare and nearly always mild and self-limited. It cannot be overemphasized that this form of therapy is strictly for local palliation and is not a substitute for systemic therapy for any generalized rheumatic process. Intra-articular administration of hydrocortisone has proved a useful adjunct to general measures in the management of rheumatoid arthritis, osteoarthritis, and gout, particularly when one or only a few joints are actively involved. For localized conditions, such as bursitis, traumatic arthritis, tennis elbow, and tenosynovitis such as "trigger finger," hydrocortisone injections were successfully employed alone.

California Medicine, San Francisco

79:271-342 (Oct.) 1953

Practical Applications of Paper Electrophoresis. T. H. Spaet.—p. 271.
Management of Allergic Patients: Practical Considerations. R. A. Kern. —p. 274.
Traumatic Pancreatitis. C. J. Berne and R. L. Walters.—p. 279.
Treatment of Infectious Diseases: Advances in Use of Antimicrobial Drugs. H. C. Hinshaw.—p. 282.
Radiological Aspects of "Collagen" Diseases. L. H. Garland and M. A. Sisson.—p. 284.
Swallowed Foreign Bodies. B. H. Feder and G. G. Myers.—p. 293.
Progressive Muscular Dystrophy: Preliminary Report on Treatment with Amino Acids, Folic Acid and Vitamins. J. R. Van Meter.—p. 297.
•Veratrum Viride: Hypotensive and Cardiac Effects of Intravenous Use. S. R. Elek, J. D. McNair and G. C. Griffith.—p. 300.
Cardiovascular Disease Case Progress Index: Means of Aiding Research and Supplying Teaching Material. M. S. M. Watts, E. L. Lucia and N. C. Thomas.—p. 306.
The General Practitioner in Industrial Medicine. O. R. Myers.—p. 309.
Cardiovascular System in Acute Infectious Disease. I. Fine.—p. 311.

Hypotensive and Cardiac Effects of Veratrum Viride.—When Elek and associates began their studies with *veratrum viride* in the treatment of hypertension, the purified alkaloids of veratrum were not available; hence Veratrone was used. Veratrone is an alcoholic solution of the mixed alkaloids of veratrum viride, each cubic centimeter containing 2.5 mg. of the alkaloids. The dose was measured with a tuberculin syringe, diluted with isotonic sodium chloride solution to 1 cc. and given intravenously in 2 to 3 minutes. Twenty-four patients (22 with hypotension and 2 with normal pressure) from 29 to 66 years of age were selected for study. All but three were men, and most of them had a history of essential hypertension of at least five years' duration. Vasodepression of considerable but variable degree was obtained in all patients. Maximum hypotension occurred 8 to 15 minutes after injection, and relative hypotension usually lasted at least two hours. In four patients, subnormal hypotension occurred, but there were no clinical manifestations of shock. The blood pressure rose promptly when pressor drugs were administered. A dose of 0.3 to 0.5 mg. brought about a satisfactory decrease in blood pressure. The degree of decrease was affected by the speed of administration and in a few patients by idiosyncratic sensitivity to the drug. Veratrum viride has an extravagal action on the pulse rate, and in that and other respects it resembles digitalis. For this reason, great caution is necessary when a veratrum preparation is to be given to a patient who has been treated with digitalis. Atropine reduced, but did not abolish, the hypotensive effect of veratrum and was more effective when given before veratrum. This indicates that the parasympathomimetic action of veratrum is important in the mechanism of blood pressure reduction. The disease states most suitable for therapy with veratrum preparations would be those in which severe hypertension is the primary cause of the symptoms and may jeopardize the patient's life. Such conditions are eclampsia, acute pulmonary edema or congestive heart failure, and severe or protracted headache due to hypertension. The recently reported observation that veratrum decreases the peripheral resistance in the cerebral blood vessels suggests the possible use of this drug in hypertensive encephalopathic conditions.

Diseases of Chest, Chicago

24:361-476 (Oct.) 1953

•Control Study of Isoniazid: Factors Influencing Response of Pulmonary Tuberculosis to Chemotherapy. United States Public Health Service Cooperative Investigation.—p. 361.
Use of Pulmonary Function Tests for Disability Appraisal: Including Evaluation Standards in Chronic Pulmonary Disease. H. L. Motley. —p. 378.
Some Problems of Bronchospirometry Analysis of 1,000 Procedures. E. A. Gaensler.—p. 390.
•Isonicotinic Acid Hydrazid (Rimifon) in Treatment of Tuberculosis. D. G. Alarcon and A. Rivas.—p. 407.
Experimental Bacterial Endocarditis and Proliferative Glomerulonephritis: Description of Method of Production Utilizing Bilateral Lower Extremity or Single Aorta-Vena Cava Arteriovenous Fistulas. C. W. Lillehei, J. D. Wargo and R. N. Hammerstrom.—p. 421.
Angulation Roentgenograms in Obscure Lung Lesions: Standardized Technique. M. H. Sokoloff and J. J. Mendelsohn.—p. 445.
Genesis of Good Teaching. G. E. Miller.—p. 452.

Response of Pulmonary Tuberculosis to Chemotherapy.—The announcement early in 1952 of the remarkable results achieved in the first trials of isoniazid in tuberculous patients was followed by uncertainty among physicians how best to incorporate the new drug into current treatment programs. Their questions were whether isoniazid was as effective as streptomycin plus *p*-aminosalicylic acid (PAS) and how frequently they could expect results similar to those obtained in the pilot trials. To meet this need, the U. S. Public Health Service in April, 1952, invited physicians in 22 tuberculosis hospitals to undertake a large scale control study of isoniazid. This report gives preliminary findings on the first 583 streptomycin-sensitive patients who completed 40 weeks of treatment. Comparison of the results in three randomly selected regimen groups shows isoniazid plus streptomycin to be slightly superior to the other two regimens, isoniazid alone and streptomycin plus *p*-aminosalicylic acid, which were approximately equal. The similarity of the results of the three regimens and the fact that only about half of each group showed significant improvement in the roentgenograms during treatment led to an examination of other factors that might influence the response to chemotherapy. The frequency of significant roentgenologic improvement has been examined in relation to the age, race, and sex of the patients and the stage, extent, and duration of the disease. Preliminary analysis indicates that in this group of patients the age of the patient, the duration of the disease, and whether one or both lungs were involved were the factors most closely associated with roentgenologic improvement. The younger the patient and the more recent his disease, the greater the probability of improvement during treatment. Disease in only one lung improved more frequently than bilateral disease.

Isoniazid in Treatment of Tuberculosis.—Following reports on the effectiveness of isoniazid (isonicotinic acid hydrazide) in the treatment of tuberculosis, a clinical trial was instituted at the San Angel Sanatorium in Mexico City. Beginning in March, 1952, a series of 13 hospitalized and 12 ambulatory patients were given isoniazid (Rimifon), and the results were evaluated at the end of a 90 day period. It was found that the drug is almost nontoxic at a daily dose of 4 mg. per kilogram of body weight. Further clinical observations in one patient taking a routine dosage of 8 mg. per kilogram of body weight for a period longer than 90 days seem to indicate that the drug is also well tolerated on this higher dosage schedule. The drug produced a euphoric effect. In the hospitalized group, symptomatic response in the majority of patients was excellent as evidenced by increase in appetite, gain in weight, tendency toward normal temperature, diminished cough, and improved character of the sputum. In only 5 of the 12 hospitalized patients with positive sputum cultures at the beginning of therapy were consistently negative cultures obtained by the end of the treatment period. Roentgenologic changes were slow to develop in the few patients in which they were evident. The films taken at the end of 90 days of treatment showed beginning changes in some of the patients not previously exhibiting improvement. Some patients failed to respond to the drug. There is the possibility of a correlation between failure to respond to isoniazid and a previous history of resistance to chemically related drugs such as the thiosemicarbazones. The results in the ambulatory patients were less satisfactory indicating the need for bed rest and an adequately controlled regimen. In evaluating these results, it should be considered that the hospitalized patients had not responded to any other procedures and were critically ill at the time treatment was started. Four of the patients were practically moribund, and in three of these the drug proved to be lifesaving. The fourth patient responded initially but then regressed. It was felt that the drug prolonged her life about four months.

Georgia Medical Association Journal, Atlanta

42:436-472 (Oct.) 1953

Some Recent Advances in Hematology. C. C. Sturgis.—p. 445.
Carcinoma of the Stomach. A. Ochsner.—p. 450.
*Therapeutic Response of Surgical Resection in Pulmonary Tuberculosis: Study of 100 Cases. W. E. Van Fleit, O. A. Abbott and W. A. Hopkins.—p. 455.
Some Methods That Have Proved Useful in Beginning of Psychotherapy with Neurotic Patients. J. Warkentin.—p. 459.
Pre- and Post-Operative Management One-Stage Total Adrenalectomy: Report of Four Cases. T. A. McGoldrick Jr.—p. 461.
Surgical Correction of Achalasia of Esophagus in Infants. R. King. —p. 466.

Surgical Resection in Pulmonary Tuberculosis.—Pulmonary resection was carried out in 81 male and 19 female patients between the ages of 7 and 70 with pulmonary tuberculosis. Of the 100 patients, 30 underwent early elective resection as the primary therapeutic measure, while the remaining 70 patients had lesions resected after failure to respond to other accepted forms of treatment. The indications for resection were bronchiectasis in 6 patients, nodular conglomerate lesions with irreparable parenchymal changes and with cavities in 32 or without cavities in 40, thoracoplasty failures in 5, tuberculoma in 5, suspected neoplasm in 9, and large blocked cavities in 3. Preoperative preparation consisted of bed rest and antibiotic therapy. Despite preparatory therapy, 64 patients had persistently positive sputum in the immediate preoperative period. The types of surgical resections used were total pneumonectomy in 17 patients, lobectomy in 77, segmental resection in 25, and subsegmental or partial segmental (wedge) resection in 14. This made a total of 133 resections in the 100 patients; one patient had bilateral lower lobectomies performed in stages for tuberculous bronchiectasis. Some form of postresection collapse therapy was instituted in 60 patients, 43 of whom had small tailoring thoracoplasties after lobectomy. Twenty-two surgical complications, such as wound infection, pulmonary infarction, coagulated hemothorax, bronchopleural fistula, and atelectasis, occurred in 19 patients. Inadequate preoperative chemotherapy, bacterial resistance to chemotherapy, and active endobronchial disease played a major part in the production of bronchopleural fistula. Importance of early recognition and treatment of this most serious tuberculous complication is stressed. There were five deaths; two of these occurred within 30 days of surgical resection (an operative mortality rate of 2%) in patients with massive contralateral atelectasis and severe cardiac arrhythmia; two late deaths from uncontrolled tuberculosis in the presence of bronchopleural fistula occurred on the 44th postoperative day and during the 44th postoperative month; and the fifth death was a result of concomitant contralateral bronchogenic carcinoma and occurred during the 11th postoperative month. Of the 95 survivors, 46 made a full clinical recovery; that is, the patients' sputums were bacteriologically negative for at least 24 months and their physical activity was unrestricted. Thirty-four patients made an apparent clinical recovery with sputums being bacteriologically negative for 12 months and with unrestricted physical activity. Of the remaining 15 patients still under treatment, 10 had negative sputums and 5 had positive sputums. Thus 90% of the patients had achieved sputum conversion.

Geriatrics, Minneapolis

8:527-574 (Oct.) 1953

*Plastic Surgical Repair of Chronic Leg Ulcers. P. W. Greeley.—p. 527.
Prevention of Arteriosclerosis. C. Moses.—p. 534.
Pinning Hip Fractures in the Aged. H. E. Hipps.—p. 545.
Radiation Therapy for Bronchogenic Carcinoma. H. F. Hare, C. R. Souders, M. Cote and others.—p. 552.
Personality Reactions to ACTH and Related Substance. P. A. Draper. —p. 557.

Plastic Repair of Chronic Leg Ulcers.—According to Greeley chronic ulcers of the lower extremity fail to heal because of poor blood supply in an area in which basic circulation is comparatively deficient even under normal conditions. Any crural ulcer that has remained open for a long time becomes fibrotic; this in turn interferes further with already damaged circulation. Consequently, before any local reconstructive measures can be undertaken, study of the underlying circulation must be made and these factors corrected first. This paper is concerned with the management of chronic ulcers of the lower extremity that follow burns and avulsions, compound fractures, varicose, postphlebitic, and arteriosclerotic ulcers, radiation injuries, and carcinoma. Treatment of chronic leg ulcers consists of wide excision, after which the resulting surgical defect is covered. Not all types of skin grafts are suitable for covering chronic open wounds of the lower extremity. Pinch grafts give a poor surface covering. Full thickness skin grafts cannot be expected to grow. Consequently the split thickness skin graft is usually used and some type of pedicle flap, when skin with its subcutaneous fat pad is needed. In burns and avulsions and in ulcers associated with compound fractures, split thickness skin grafts are usually satisfactory. In varicose ulcers, local treatment must be preceded by eliminating the varicosities by ligation, stripping, or a combination of both. The leg should be elevated to reduce the edema. Lumbar sympathectomy may aid in selected cases. Testing the circulation of the lower extremity with lumbar block and lumbar sympathectomy, if circulatory improvement follows block, is particularly advisable in postphlebitic ulcers. Preliminary sympathectomy is helpful also in nearly all patients with arteriosclerotic ulcers. Radiation injuries are often associated with severe pain and itching and may ultimately degenerate into squamous cell carcinoma. The only method of treatment is wide excision through a level of good blood supply in unirradiated tissues. The resulting surgical wound is then covered with either a split thickness skin graft or pedicle flap.

Iowa State Medical Society Journal, Des Moines

43:443-488 (Nov.) 1953

SYMPOSIUM ON THORACIC CARDIOVASCULAR SURGERY
AT THE STATE UNIVERSITY OF IOWA

I. Medical and Physiological Evaluation. J. W. Culbertson and G. N. Bedell.—p. 443.
II. Roentgenologic Evaluation. E. F. Van Epps.—p. 451.
III. Surgical Treatment of Tetralogy of Fallot, Patent Ductus Arteriosus, Coarctation of Aorta, Mitral Stenosis, and Constrictive Pericarditis. J. L. Ehrenhaft.—p. 455.
Psychiatric Aspects of Geriatrics. W. Malamud.—p. 461.

J. Am. Geriatrics Society, Baltimore

1:597-669 (Sept.) 1953

Intraventricular and Intracerebral Hemorrhage as Factors in Fatal Termination of Ruptured Intracranial Aneurysms. R. K. Thompson, W. H. Mosberg Jr. and L. O. J. Manganiello.—p. 597.
Old Age and the Vices. R. L. Cecil.—p. 604.
Adrenal Cortical Failure. L. J. Soffer and J. L. Gabrilove.—p. 609.
Management of Respiratory Infections in Older Patients with Bronchial Asthma and Pulmonary Emphysema. A. L. Barach.—p. 616.
Differential Diagnosis of Wheezing Respiration. L. H. Clerf.—p. 623.
*Present Status of Peripheral Neurectomy for Pain in Obliterative Arterial Disease. A. Blain III, N. A. Flores and F. Gerbasi.—p. 627.
Treatment of Acute Perforations of Gastric and Duodenal Ulcers. P. Banzet.—p. 633.
Primary Resection of Colon for Carcinoma. C. B. Ripstein.—p. 639.
Results in Treatment in Cancer of Breast. E. K. Robinson.—p. 642.
Anesthesia in Older Age Group. J. E. Osborn.—p. 648.
Rationale of Immediate Fixation of Fractures About the Hip in Elderly Patients. D. M. Bosworth and J. W. Fielding.—p. 653.
Oral Metrazol Therapy in Psychoses with Cerebral Arteriosclerosis. T. C. C. Fong.—p. 662.
Sympathetic Ophthalmia. H. H. Joy.—p. 665.

Peripheral Neurectomy.—When conservative therapy and sympathectomy fail to relieve pain in the extremities caused by arteriosclerosis obliterans or thromboangiitis obliterans, peripheral neurectomy should be considered before amputation is decided on. Peripheral neurectomy relieves pretrophic and trophic rest pain or "intractable pain" by interrupting afferent sensory fibers that carry painful stimuli via spinal nerves. Unfortunately, the vasodilatation afforded by this method is only temporary. Results of this operation in relieving pain and saving limbs are superior in thromboangiitis obliterans and disappointing in arteriosclerosis obliterans.

Journal Clin. Endocrin. & Metab., Springfield, Ill.

13:1157-1304 (Oct.) 1953

Studies in Nephrosis: Chemical Corticoids, Salt-Retaining Factor, and Effect of ACTH. M. F. McCall and B. Singer.—p. 1157.
Studies on Adrenocortical Function in Relation to Nephrotic Syndrome. E. B. Farnsworth.—p. 1169.
Changes in Serum Vitamin A Level During Human Menstrual Cycle. P. A. Laurence and A. E. Sobel.—p. 1192.
Absorption of Corticoids and Related Steroids from Subcutaneously Implanted Pellets in Guinea Pig. F. Fuenzalida and A. Lipschutz.—p. 1201.
Paper Chromatography of Pregnanediol and Related Compounds. H. S. Bloch, B. Zimmermann and S. L. Cohen.—p. 1206.
Conversion of Intravenously Administered Progesterone to Pregnanediol in Human Female. I. Rothchild.—p. 1213.
Comparison of Effects of Epinephrine and Nor-Epinephrine on Circulating Eosinophils. A. Bisso.—p. 1226.
*Evolution of Nodular Goiter. S. Taylor.—p. 1232.
Sexual Precocity in 5-Year-Old Boy with Interstitial-Cell Tumor of Testis. R. Hertz, M. I. Cohen, L. G. Lewis and H. I. Firminger.—p. 1248.
An Unusual Ovarian Tumor Containing Leydig Cells But Associated with Endometrial Hyperplasia in Postmenopausal Woman. R. E. Scully.—p. 1254.
Idiopathic Hypoparathyroidism and Chronic Adrenal Insufficiency: Case Report. E. Leifer and W. Hollander Jr.—p. 1264.

Evolution of Nodular Goiter.—Simple goiter occurs sporadically all over the world and in the form of endemic goiter affects millions of persons in every continent. Simple goiter almost inevitably progresses to the nodular form. Nodular goiter may become the seat of hyperthyroidism. When this occurs, the clinical picture is different from that seen in the younger patient with the non-nodular gland of Graves' disease. Finally, the possible association of thyroid cancer with nodular goiter makes a study of the latter mandatory. This investigation started with an attempt to calculate more accurately the amount of irradiation received by the thyroid when radioactive iodine is administered therapeutically. Patients with nontoxic goiter who were to undergo thyroidectomy were given a tracer dose of radioactive iodine (100 μc of I^{131}), and, after operation, autoradiographs were prepared from sections made through whole lobes. More than 60 thyroid glands were investigated by means of radioactive iodine. In young patients from an area of endemic goiter, there was an increase in iodine uptake, which was uniform throughout the gland. In older patients the iodine uptake was confined to discrete areas made up of uniformly small follicles. Rarely, there was only a single area of hyperactivity. All areas of hyperactivity progressed to a stage of central hemorrhage and necrosis, losing their capacity to take up iodine. Fresh areas of activity then appeared. Multinodular goiters represented the continued repetition of this process.

Journal of Clinical Nutrition, Allentown, Pa.

1:1-90 (Sept.-Oct.) 1953. **Partial Index**

Basic Research and Its Application in Field of Clinical Nutrition. C. G. King.—p. 1.
Dietary Treatment of Hypertension. I. H. Page and A. C. Corcoran.—p. 7.
*Growth Failure in School Children: Further Studies of Vitamin B_{12} Dietary Supplements. N. C. Wetzel, H. H. Hopwood, M. E. Kuechle and R. M. Grueninger.—p. 17.
Alcoholism as Nutritional Problem. R. J. Williams.—p. 32.
Therapeutic Uses of Low Fat, Low Cholesterol Diets: I. Treatment of Essential Familial Xanthomatosis. F. Urbach, E. A. Hildreth and M. T. Wackerman.—p. 52.

Vitamin B_{12} Supplements for Growth Failure.—The results of a School Nutrition Study are presented that support the conclusion that vitamin B_{12} exerts a "growth-promoting-effect" when given as a dietary supplement to children in growth failure. The general benefits derived from the present study of vitamin B_{12} dietary supplements were felt well beyond the point at which recovery responses developed in individual children. The most immediate reactions were noted by the personnel of the medical and nursing departments, but almost simultaneously by teachers in the classrooms who became aware that at least some of the pupils were improving in behavior, attitude, and scholastic work or that they were showing less strain and fatigue or, greater interest and attention, and hence better all-around progress than before. Expressions of similar import were offered by parents. The fact that the children were well disposed toward the program is attested to by the fine attendance record they made and by their willingness to participate faithfully in the extra routine of tests, measurements, and supplements.

Journal of International College of Surgeons, Chicago

20:393-529 (Oct.) 1953

Commissurotomy for Aortic Stenosis. C. P. Bailey, H. E. Bolton, W. L. Jamison and H. B. Larzelere.—p. 393.
*Recent Trends in Management of Tuberculosis of Cervix. H. Sered, F. H. Falls and B. P. Zummo.—p. 409.
*Homoplastic and Anaphylactic Procedures as Influenced by Prolonged Anesthesia. G. Wolfsohn.—p. 421.
*Carcinoma of Breast: 10-Year Survey at Winnipeg General Hospital. W. A. MacLean.—p. 430.
Delay in Definitive Treatment of Carcinoma of Bladder. P. B. Hudson A. L. Finkle and A. P. Stout.—p. 442.
New Operation for Diversion of Urine, with Voluntary Control of Feces and Urine: Preliminary Report. O. S. Lowsley, T. H. Johnson and A. E. Rueda.—p. 457.
Femoral Osteotomy in Treatment of Marie-Strumpell's Disease. H. Milch.—p. 465.
Systematic Plan for Early Treatment of Civilian Burns. L. C. Bartlett.—p. 474.
Adenocarcinoma of Appendix. H. I. Le Brun.—p. 481.
Intrathoracic Goiter. A. S. Jackson.—p. 485.
Radium and Roentgen Limitation of Tumors of Bladder. L. G. Lewis.—p. 493.
Metacarpal and Thumb Fractures. D. Goldberg.—p. 497.
Tumors of Bladder. G. H. Ewell and J. J. Mueller.—p. 506.

Tuberculosis of Cervix.—The uterine cervix is one of the less common sites of localization of tuberculosis in the female genital tract. Although it is usually of secondary origin, cases of primary origin have been reported. In the authors' series of 55 patients with gynecologic tuberculosis, 9 had cervical tuberculosis; this incidence of 16% is higher than that reported in the literature (2 to 3%) but is in accordance with the more recent observations and suggestions of Jameson. In this series, bloody discharge was the most frequent initial clinical manifestation. The condition must be differentiated from chronic cervicitis, cervical erosion, and carcinoma of the cervix. Cervical biopsy, cultures, smears, and guinea pig inoculation can be used for this purpose. Endometrial and cervical biopsies can be done repeatedly, if streptomycin is used, without fear of initiating miliary spread of the disease. The authors found that 120 days of streptomycin therapy, preferably in conjunction with p-aminosalicylic acid, usually resulted in a marked degree of improvement. In seven out of the nine patients, the gross appearance of the cervix was restored to normal. During the year preceding writing of this report, the authors added isoniazid to their armamentarium. In most cases of tuberculosis of the cervix, a total hysterectomy and at least a bilateral salpingo-oophorectomy should be done. The surgical management of the ovaries is principally dependent on whether obvious or potential involvement of the ovary is present. Those to be left should be bisected and carefully studied. If the adnexae are considered to be free of tuberculosis, or only minimally involved, at the completion of drug therapy, it is suggested that the patient not be operated on, provided the cervix appears normal and biopsies and culture studies give negative results.

Homografts and Anesthesia.—The author based his original research, begun in 1935, on a fact discovered by Besredka in 1909—that anaphylactic shock in experimental animals does not occur when an animal is in narcosis. This was found to be true of humans as well, and further attempts made with animals and, later, human beings to prevent anaphylactic shock with local anesthesia proved successful. The present report is based on the idea that sequestration of skin homografts represents a local anaphylactic reaction. This reaction, attributed to intolerance of protein substances, nearly always ends with necrosis and expulsion of the transplant. Among the drugs suggested to prolong the life of the homograft, corticotropin (ACTH) and cortisone are of great interest and unquestionable importance. In experimental animals, as well as in human beings, these drugs tend to suppress the local reaction and prolong the life of the skin graft two or three times. The same result is obtained by keeping the transplant under prolonged anesthesia; this method is simpler, cheaper, and quicker than the other. The author obtained excellent results using an ethyl aminobenzoate preparation (Prolongal-Benzocaine), a watery solution of 2% ethyl aminobenzoate (Benzocaine) in urethane that precipitates ethyl aminobenzoate crystals into the tissue, causing slow absorption of the anesthetic. Five cases are reported in which wounds with delayed healing periods decreased to a certain degree as the result of a preliminary application of amnion, but then failed to react. Only by combination of amnion with prolonged anesthesia with Prolongal-Benzocaine could striking success be obtained.

Carcinoma of Breast.—A series of 546 patients with mammary carcinoma treated at the Winnipeg General Hospital is analyzed. The average age of the patients was 54 years. The incidence of carcinoma in two breasts was similar. Fifty-five per cent of the tumors were located in the upper outer quadrant. Radical mastectomy as originally described by Halstead was performed in 84% of the patients studied. The operative mortality rate was 0.66%; 91.5% of the patients have been followed up from the time of operation to the end of 1950. The over-all five year survival rate was 44.5%. In cases in which the axillary nodes were not involved in tumor (stage 1), the five year survival rate was 73.9%. In cases in which the axillary nodes were involved (stage 2), the five year survival rate was 27%. In 100 cases in which either preoperative or postoperative irradiation was employed, a five year survival rate of 31% was established. Carcinoma of the breast is commonest between the ages of 40 and 59 and is uncommon before the age of 30. There was one male patient in this series. The vast majority of mammary carcinomas arise from the duct system of the breast. Neither the situation of the tumor nor the age of the patient appears to affect the prognosis to any marked degree. The prognosis is shortened, however, as the duration of the disease is increased. Medical education of the public as to the importance of breast masses has proved effective, since patients are now seeking medical advice earlier in the development of the disease.

Journal of Investigative Dermatology, Baltimore

21:205-272 (Oct.) 1953. Partial Index

Effect of Hydrocortisone Acetate Ointment on Pruritus Ani. R. M. Alexander and S. D. Manheim.—p. 223.
In Vitro Antimicrobial Activities of Certain Amino Steroids. F. C. Kull, G. A. Castellano and R. L. Mayer.—p. 227.
Use of Cellophane Tape in Diagnosis of Tinea Versicolor. J. A. Potto.—p. 229.
Mode of Action of Selenium Sulfide. P. Flesch.—p. 233.
Attempts on Passive Local Sensitization by Intracutaneous Injection of Cells from Freshly Excised Lymph Nodes of Eczema Allergics. H. Haxthausen.—p. 237.
Penetration of Radioactive Stearic Acid into Skin of Rat. E. O. Butcher.—p. 243.
Studies of Thorium X Applied to Human Skin: III. Relative Effects of Alpha and Beta-Gamma Irradiation in Production of Erythema. V. A. Witten, E. W. Brauer, V. Holmstrom and R. Loevinger.—p. 249.
Further Observations on Factors which Influence Water Content of Stratum Corneum. I. H. Blank.—p. 259.

Journal Lab. and Clinical Medicine, St. Louis

42:499-664 (Oct.) 1953

Blood Ammonia and Electrolytes in Hepatic Coma. R. Schwartz, G. B. Phillips, G. J. Gabuzda Jr. and C. S. Davidson.—p 499.
Spontaneous Antidiuresis During Water Diuresis: Renal Function and Electrolyte Excretion. C. K. Friedberg, R. C. Taymor and J. B. Minor.—p. 509.
*Biochemical and Clinical Effects Resulting from Administration of Cation-Anion Exchange Resin in Decompensated Hepatic Cirrhosis. M. M. Best and J. D. Wathen.—p. 518.
Quantitative and Qualitative Responses of Blood Lymphocytes to Stress Stimuli. T. F. Dougherty and J. A. Frank.—p. 530.
Assessment of Stress in Human Subjects by Means of Quantitative and Qualitative Changes of Blood Lymphocytes. J. A. Frank and T. F. Dougherty.—p. 538.
Ethylenediaminetetraacetic Acid in Mobilization and Removal of Iron in Case of Hemochromatosis. H. Wishinsky, T. Weinberg, E. M. Prévost and others.—p. 550.
Immunologic Mechanisms of Leukocyte Abnormalities. S. C. Finch, J. F. Ross and F. G. Ebaugh Jr.—p. 555.
Observations on Isosensitization to the Kell Factor. A. S. Wiener, G. J. Brancato and R. Waltman.—p. 570.
Effect of Homologous Bone Marrow Emulsion on Rabbits After Total Body Irradiation. M. F. Hilfinger Jr., J. H. Ferguson and P. A. Riemenschneider.—p. 581.
Proteolytic Enzyme Studies in Irradiated Rabbits. N. K. M de Leeuw, C. Wright and J. L. Morton.—p. 592.
Study of Antigen Localization and Degradation and Histologic Reaction in Spleen of Normal, X-Irradiated, and Spleen-Shielded Rats. F. W. Fitch, P. Barker, K. H. Soules and R. W. Wissler.—p. 598.
Renal Excretion of Creatinine and Inulin in Man. E. E. Mandel, F. L. Jones, M. J. Willis and W. H. Cargill.—p. 621.
Antifungal Activity of Some Aromatic Diamidiness. I. B. Christison and N. F. Conant.—p. 638.
Viscosimetric Determination of Blood Fibrinogen. W. E. Petersen.—p. 641.

Effects of Cation-Anion Exchange Resin in Cirrhosis.—Best and Wathen describe the effects of long-term continuous administration of a mixture of cation and anion exchange resins to a group of nine patients with hepatic cirrhosis complicated by ascites and edema. All patients had been incapacitated for at least three months with ascites and dependent edema. Frequent paracenteses and the administration of mercurial diuretics had provided only temporary relief of symptoms. The clinical impression of Laennec's cirrhosis was confirmed in all by transthoracic liver biopsy by means of a Vim-Silvermann needle. Another biopsy specimen was examined histologically at completion of the study or at autopsy. Carbacrylamine resins (Carbo-Resin) were administered in three divided doses to a total daily dose of 50 to 70 gm. in water. The elimination of salt was the only dietetic restriction. The patients were advised to eliminate alcohol, but cooperation in this regard was probably poor. A vitamin B complex supplement was prescribed. Initially all patients were in bed and treated in the hospital. As their condition improved, they were encouraged to resume activity and were followed in a special outpatient clinic. Patients were weighed daily in the hospital and at weekly intervals thereafter. No paracenteses were performed during the treatment period. One patient required mercurial diuretics in addition to the resins. This is the only patient listed in a table as having a poor response. The results are listed as excellent in six patients who were freed of ascites and edema, were able to work, and could stop the resin therapy; one of these patients died after trauma. One of the two in whom the result was good is able to work but requires resins; the other had a good immediate response but died of a hemorrhage after pelvic surgery. The relationship of sodium retention to ascites and edema in Laennec's cirrhosis was reaffirmed in these patients. Increases in serum proteins and colloidal osmotic pressure noted during this long-term study probably indicate an improved nutritional state.

Journal-Lancet, Minneapolis

73:399-448 (Oct.) 1953

Diabetic Retinopathy. R. R. Cooper.—p. 399.
Radioactive Iodine in Diagnosis and Treatment of Thyroid Disease. A. L. Schultz.—p. 403.
Malt Soup Extract as Bowel Content Modifier in Geriatric Constipation: Clinical Study. L. J. Cass and W. S. Frederik.—p. 414.
Andrew T. Rasmussen—Scientist, Educator and Humanitarian. J. A. Myers.—p. 417.
Prevention of Accidental Salicylate Poisoning in Children. E. Sachs. —p. 422.
Pain Patterns in Diagnosis of Upper Abdominal Diseases. L. A. Smith. —p. 423.
Pain from Standpoint of Physical Medicine. W. F. Wilhelm and F. H. Krusen.—p. 430.

J. Neuropathology & Exper. Neurology, Baltimore

12:311-410 (Oct.) 1953

Neuroepithelioma: Its Place in Histogenetic Classification of Primary Neuroectodermal Brain Tumors. J. H. Globus and R. M. Cares. —p. 311.
Encephalopathy Produced by Extracts of Eosinophils and Bone Marrow. J. S. Meyer and J. M. Foley.—p. 349.
Effects of Convulsions Induced by Various Types of Electric Stimulation upon Cerebrospinal Fluid. M. Spiegel-Adolf, C. W. Umlauf and E. G. Szekely.—p. 363.
Effect of Acute Alcoholic Intoxication on Blood-Brain Barrier. W. J. Horsey.—p. 368.
Experimental Allergic Encephalomyelitis During and Following Cortone Acetate Treatment. A. Ferraro and L. Roizin.—p. 373.
Esterases and Phosphatases of Brain: Histochemical Study. G. Gomori and R. D. Chessick.—p. 387.
Liver-Tissue Changes in Schizophrenia: Brief Critical Note. S. Scheidegger.—p. 397.
Method for Combined Staining of Cells and Fibers in Nervous System. H. Klüver and E. Barrera.—p. 400.

Journal of Urology, Baltimore

70:559-656 (Oct.) 1953

Place of Artificial Kidney in Research and Treatment. J. H. Harrison. —p. 559.
New Ureteral Meatome for Use with Resectoscope. R. G. Bunge.—p. 568.
Physiology of Hyperchloremic Acidosis Following Ureterosigmoidostomy: Study of Urinary Reabsorption with Radioactive Isotopes. M. L. Rosenberg.—p. 569.
Present Status of Surgical Procedures for Uretero-Enteric Anastomosis. A. W. Bohne.—p. 581.
Delayed Cystograms. C. M. Stewart.—p. 588.
Litholapaxy. R. M. Nesbit.—p. 594.
Bladder Enlargement Through Ileocystoplasty. J. Cibert.—p. 600.
Correlation of Electromyographic Records with Neurogenic Dysfunction of Human Urinary Bladder. W. H. Boyce, E. L. Corey, S. A. Vest and C. R. French.—p. 605.
Transurethral Resection for Paralyzed Bladder: Preliminary Results. F. M. Jacobs, J. L. Berry and J. C. Orman.—p. 615.
*Simple Cystectomy and Segmental Resection for Cancer of Bladder. H. J. Jewett.—p. 620.
Local Anesthesia in Male Urethra. J. C. Hayward, L. M. Orr and H. F. LaGuette.—p. 624.
Painless Dilatation of Urethral Meatal Strictures Following Transurethral Prostatic Resection. R. R. Landes.—p. 626.
Effect of Age upon Glutamine Synthesis and Glutamine Amide Exchange of Rat Liver, Kidney and Testis. J. M. Reiner and P. B. Hudson. —p. 627.
Urologic Battle Injury in Korean Conflict. H. B. Henkel.—p. 637.
Genital Self-Mutilations by Mental Patients. L. M. Beilin.—p. 648.

Cystectomy or Segmental Resection for Cancer of Bladder. —Jewett compared the results 5 years or longer after simple cystectomy in 49 cases of infiltrating cancer with those obtained by segmental resection in a similar group of 46 cases. Cystectomy provided a somewhat higher survival rate than segmental resection when the tumor was deeply infiltrating and a somewhat lower survival rate when it was superficially infiltrating, regardless of its cellular appearance. Urologic complications, usually renal, could be demonstrated in nearly all patients 5 years after ureterointestinal anastomosis. Proof of the superiority of radical cystectomy, with or without exenteration, depends largely on the results 5 years or more after operation in cases with microscopic evidence of metastases in the lymph nodes.

Maine Medical Association Journal, Portland

44:257-280 (Sept.) 1953

Hysterectomy: Total Versus Subtotal. O. F. Pomerleau.—p. 257.
Urinary Calculus. W. A. Greenlaw.—p. 259.
Managing a Case of Compound Nasal Fracture. J. E. Poulin.—p. 263.
Obstetric Case History. C. R. Geer.—p. 265.
Endometriosis in Pregnancy—Case Report. E. A. McLean.—p. 267.

44:281-298 (Oct.) 1953

Lame Backs. F. R. Ober.—p. 281.
*Oral Thrush Due to Antibiotic Therapy: Report of Four Cases. M. Bacon —p. 284.
Effects of Antibiotics on Blood-Clotting-Mechanism. E. D. Humphreys, M. A. Webber and P. R. Briggs.—p. 286.
Unusual Surgical Complication Following Subtotal Gastric Resection—Case Report. W. F. Mahaney.—p. 288.
Vaginal Hysterectomy. E. T. Bennet.—p. 289.

Oral Thrush Due to Antibiotic Therapy.—The first of the four cases presented by Bacon was that of a 5-year-old girl who was given oxytetracycline (Terramycin) every six hours for three days for a grippe-like condition. Then the child complained of a sore throat and swollen glands in the neck. There were pustular and follicular lesions on the mucous membranes of the mouth and throat and white patches on both tonsils. A smear of the lesions of the oral cavity and culture on Sabouraud's medium revealed the organisms to be Candida (Monilia) albicans. The lesions subsided after omission of oxytetracycline and the use of an alkaline mouthwash and gargle. The second patient received penicillin intramuscularly and as an inhalation in the form of an aerosol because of bronchiectasis, laryngitis, and sinusitis. The third patient also had been given penicillin intramuscularly and by mouth, and the fourth patient had received the same antibiotic parenterally. C. albicans was cultured from the oral lesions of all four of these patients. The author feels that moniliasis or oral thrush should be considered if a patient complains of a sore throat and sore mouth after the use of antibiotics. The examination reveals tiny pustules with a red or coated tongue and white membranes on the tonsillar areas. The diagnosis is confirmed by smears and cultures obtained from the mouth and throat. The cause is an overgrowth of C. albicans. The determination of the oral pH and the finding of an acid saliva are additional adjuncts. The treatment includes the omission of the offending antibiotics and the use of alkaline mouthwashes and gargles.

Michigan State Medical Society Journal, Lansing

52:1025-1136 (Oct.) 1953

Obesity: Key to Prevention of Diabetes. W. H. Olmsted.—p. 1057.
Obesity: Clinical Observations. R. C. Moehlig.—p. 1062.
Control of the Diabetic. W. S. Reveno.—p. 1064.
Diabetic Coma and Its Treatment. W. W. Engstrom.—p. 1068.
Problem of Diabetic Retinopathy. J. T. Beardwood Jr. and R. H. Trueman. —p. 1074.
Functional Rehabilitation in Diabetes. G. E. Anderson.—p. 1080.
Art of Using Insulins in Treatment of Diabetes. C. D. Eaton.—p. 1086.
Diabetes and Tuberculosis. G. G. Thosteson and R. S. Tibbits.—p. 1088.
Kimmelstiel-Wilson Syndrome. L. F. Segar.—p. 1092.
Fructose Metabolism in Diabetes: Clinical Applications. H. S. Seltzer and J. W. Conn.—p. 1095.
Michigan State Medical Assistants Society. E. E. Peck.—p. 1100.
Present State of Tonography. P. C. Kronfeld.—p. 1101.
Shall Basic Science Laws be Repealed or Revised to Contain Essentials of Uniform Basic Science Act? J. E. McIntyre.—p. 1102.
Medical Licensure in Michigan. E. C. Swanson.—p. 1106.

Neurology, Minneapolis

3:627-706 (Sept.) 1953

Extrapyramidal System: Inquiry into Validity of Concept. R. Meyers. —p. 627.
Recent Experimental Studies on Pain and Analgesia. A. Wikler.—p. 656.
Multiple Symmetrical Polyneuropathy Treated with Cortisone. F. Plum. —p. 661.
Intracarotid and Intravertebral Metrazol in Petit Mal Epilepsy. F. E. Bennett.—p. 668.
Epileptic Disorders in the Aged. P. T. White, A. A. Bailey and R. G. Bickford.—p. 674.
*Is Order of Birth a Factor in Epilepsy? J. K. Orr and F. Risch.—p. 679.
Clinical Use of Piromen in Spinal Cord Diseases and Injury. W. J. Friedlander and P. Bailey.—p. 684.

Is Order of Birth a Factor in Epilepsy?—Considerable emphasis has been put recently on organic disease of the brain as a factor in epilepsy, and in this connection so-called "birth trauma" and "cerebral anoxia" are of interest. A report by Nielsen and Butler points out that the significant factor in a number of cases of idiopathic epilepsy was "birth primacy." Ahlstrom, in another survey, could not corroborate this. Orr and Risch in this study of epilepsy in 158 veterans included in the routine interview questions related to the patient's sibling relationship. Interviews revealed that epilepsy occurred more frequently in those born at the end of the line of birth than in those born at the beginning. Generally it was found that the larger the family the more likely it was for the epileptic persons to be the youngest or near youngest in the family. It is admitted, however, that the evaluated data have certain limitations. 1. The patients, all men, were a selected group of veterans. 2. Several patients in whom the seizures followed trauma are included. 3. The reliability of reporting siblings dead and living might be questioned. 4. The age of the mother at patient's birth was not obtained. 5. The exact number of siblings having epilepsy was not verified, although all patients denied any family history of epilepsy. 6. The question of birth trauma was not investigated.

3:707-788 (Oct.) 1953

Greater Superficial Petrosal Neurectomy for Orbitofacial Pain: Preliminary Report. W. V. Trowbridge, J. D. French and A. E. Bayless. —p. 707.
Effect of Mesencephalic Lesions on Cortical Electroconvulsant Threshold. D. A. Freedman and J. Moossy.—p. 714.
Blood in Subarachnoid Space; Clinical Evaluation of Its Occurrence in 190 Consecutive Cases. M. Nathanson, A. L. Robins and M. A. Green. —p. 721.
Cerebral Arteriovenous Aneurysms. W. H. Druckemiller and M. B. Carpenter.—p. 725.
Hemangioendotheliomatous Meningioma Simulating Cerebral Arteriosclerosis. T. Lehoczky.—p. 737.
Prenderol: New Drug Used with Retarders in Petit Mal Epilepsy. M. A. Perlstein.—p. 744.
Tumors of Temporal Lobe. R. R. J. Strobos.—p. 752.
*Actinomycosis of Nervous System. H. Stevens.—p. 761.
Management of Head Injuries. R. C. Hardy.—p. 773.

Actinomycosis of the Nervous System.—Stevens points out that two important developments have occurred since the last comprehensive survey of the problem of actinomycosis of the central nervous system was published in 1936: (1) the advent of chemotherapy and (2) more extensive knowledge of the clinical, cultural, biological, and morphological characteristics of the several organisms that cause actinomycosis. The new classification separates actinomycosis into true actinomycosis caused by Actinomyces bovis and nocardiosis caused by Nocardia asteroides. Four case histories are described. One patient was cured by a combination of chemotherapy and surgery. This patient has been followed for eight years. The other three patients died, and autopsy was done on two. One of these showed typical multiple abscesses and the rare manifestation of mycetoma due to nocardiosis. There is need for earlier diagnosis and prompter subclassification of the actinomycoses into those caused by A. bovis and those caused by N. asteroides, with appropriate therapy guided by sensitivity tests. A. bovis is gram-positive and anaerobic and is not acid-fast; N. asteroides is aerobic, gram-positive, and partially acid-fast. Nocardia further differs from the former in that it is rarer and more virulent, spreads by hematogenous metastasis rather than by direct extension, and is more likely to invade the central nervous system. It is more sensitive to sulfonamides than A. bovis, while A. bovis is more sensitive to penicillin. Brain abscess and meningitis are the two common central nervous system complications.

New England Journal of Medicine, Boston

249:507-546 (Sept. 24) 1953

Observations on Neoplastic Spread: Some Radiologic Aspects of Problem. J. W. Turner.—p. 507.
Events Leading to Major Amputation in Patients with Arteriosclerosis. E. A. Edwards, A. J. McAdams and C. Crane.—p. 514.
Importance of Psychologic Factor in Gynecology. D. Menzer.—p. 519.
Mycology. O. F. Jillson.—p. 523.
Japanese B Encephalitis in an American Soldier Returning from Korea. F. P. Pina and U. R. Merikangas.—p. 531.

249:547-584 (Oct. 1) 1953

*Differentiation of Hemophilia into Two Groups: Study of 33 Cases. J. P. Soulier and M. J. Larrieu.—p. 547.
*Length of Life and Cause of Death in Rheumatoid Arthritis. S. Cobb, F. Anderson and W. Bauer.—p. 553.
Value of Exfoliative Cytology to General Practitioner. N. C. Foot. —p. 557.
Mycology (Concluded). O. F. Jillson.—p. 561.
Suicidal Poisoning by Methapyrilene Hydrochloride with Documentation by Paper Chromatography. A. E. O'Dea and M. Liss.—p. 566.

Types of Hemophilia.—Thirty-three male patients between the ages of 5 and 45 years with a hemorrhagic history typical of hemophilia were tested for the specific determination of the missing antihemophilic factor underlying the clotting effect. These tests were made by measuring the effect of the antihemolytic factor on the recalcification time of two hemophilic reagents prepared from the plasma of patients with assumed hemophilia. From the results of these specific determinations, the 33 patients could be classified in three groups as follows: 28 patients with hemophilia A (classic hemophilia); 4 patients with hemophilia B (plasma thromboplastin component deficiency, or Christmas disease) and 1 with hemophilia A and B. Patients in these three groups had all the classic features of hemophilia in the clinical and genetic history and in the routine blood clotting tests. The only difference in the groups was the type of the plasma profactor of thromboplastin that was missing and that was either factor A or B or both. Both factors A and B proved to be present in fresh normal plasma and in plasma from patients treated with bishydroxycoumarin (Dicumarol), but factor A disappeared in oxalated plasma during storage, whereas factor B persisted. Factor A disappeared during coagulation, whereas factor B persisted in serum. Factor A was not adsorbed on barium sulfate or asbestos, but factor B was adsorbed in either one. Both factors proved to be thermolabile. Fibrinogen (fraction 1) contains factor A only; therefore, plasma fraction 1 is effective in the treatment of only hemophilia A. However, blood and plasma transfusions are effective in the three types of hemophilia, namely, A, B, and AB.

Rheumatoid Arthritis.—Of 583 patients with rheumatoid arthritis who were hospitalized at the Massachusetts General Hospital and were followed up for an average of nine and a half years, 137 died, an over-all mortality rate of 24.4 per 1,000 patients per year, as compared with 18.9 for a comparable age and sex distribution of the population of Massachusetts in 1940. The patients with rheumatoid arthritis thus had a higher mortality than would be expected if the group were drawn from the general population. This was found to be due largely to the fact that younger persons, particularly men, succumbed more rapidly than expected possibly because they were usually subjected to economic pressures that did not allow them to rest as much as is indicated for patients with this disease, whereas the longevity of patients over 50 years was not noticeably altered. The causes of death were known in 130 of the 137 patients. Notable for their high incidence as causes of death were valvular heart disease occurring in 9 patients (7%), infections of all sorts in 32 patients (25%), renal disease in 17 (13%), and pulmonary embolism in 4 (3%). Notable for their absence or low incidence were accidental death, hypertensive heart disease, and myocardial infarction. The causes of death in rheumatoid arthritis differed from those in the population at large. The data reported are sufficiently interesting to warrant further study in larger series of patients so that the life tables can be broken down into smaller age groups and so that more significant conclusions can be drawn about differences in causes of death between arthritic patients and the general population.

249:585-634 (Oct. 8) 1953

*Adenoma and Carcinoma of Thyroid Gland. G. Crile Jr.—p. 585.
Platelet Antibody Tests in Diagnosis of Purpura. J. L. Tullis.—p. 591.
Amebic Hepatitis Presenting as Fever of Unknown Origin. P. Heller, R. J. Korn and H. J. Zimmerman.—p. 596.
Cryoglobulins in Coronary-Artery Disease. T. N. James and E. H. Drake.—p. 601.
Development of Knowledge Concerning Gastric Intrinsic Factor and Its Relation to Pernicious Anemia. W. B. Castle.—p. 603.
Clinical and Investigative Application of a New Instrument for Continuous Recording of Blood Pressure and Heart Rate. J. C. Rose, S. R. Gilford, H. P. Broida and others.—p. 615.

Adenoma and Carcinoma of Thyroid.—According to Crile, statistics on the incidence of cancer in nodular goiter are unreliable because they are based on a selected group of patients whose goiters are removed and do not represent the true incidence in the population at large. Removal of multinodular goiters cannot be regarded as a prophylactic measure to prevent cancer because multinodular goiter is extremely common and true highly malignant cancer of the thyroid gland is very rare; 80% of the highly malignant thyroid carcinomas arise without a history of preexisting goiter, and there is no demonstrable relationship between nodular goiter and the relatively common papillary cancer of the thyroid. Discrete thyroid tumors that are firm and that arouse suspicion of existing cancer should be removed whether they occur as the only palpable nodule or as a part of a multinodular goiter. Nodules that appear in patients over the age of 40 and seem to be solitary are usually dominant involutionary nodules in a multinodular goiter. In patients under 40, a solitary nodule is apt to be a true epithelial neoplasm, and the incidence of cancer is high. Most cancers of the thyroid gland in patients under 40 are papillary and have a good prognosis if an adequate operation is performed. Most thyroid cancers do not originate in adenomas but are cancers from the start. Surgeons should view operations for removal of solitary nodules not as prophylactic measures to prevent cancer but as therapeutic procedures to eradicate cancer. Even low-grade papillary cancers of the thyroid gland, if cut into, can be implanted and disseminated. Solitary tumors should be removed by total excision with a wide zone of surrounding tissue or better by total lobectomy, including removal of the isthmus. The conventional block dissection of the neck is not an adequate operation for cancer of the thyroid and should be extended to include all the regional zones of metastasis. It should also be limited to the removal of cancer-bearing areas and should not unnecessarily sacrifice the sternomastoid muscle. The results of extensive but carefully planned and nonmutilating operations have been superior to those of conventional block dissections.

North Carolina Medical Journal, Winston-Salem

14:489-540 (Oct.) 1953

Clinical and Physiologic Aspects of Emphysema: Diagnosis and Treatment. B. Gordon.—p. 489.
Anesthesia for Surgery of Heart and Great Vessels. D. L. Crandell. —p. 494.
Prevention of Cardiac Arrest During Anesthesia. L. deS. Shaffner. —p. 500.
Diagnosis and Treatment of Oral Moniliasis. C. N. Patterson.—p. 505.
Diagnosis in Carcinoma of Oral Cavity. H. P. Royster.—p. 511.
Use of Chemically Induced Hypotension in Treatment of Intracranial Aneurysm. B. Woodhall, G. L. Odom, C. R. Stephen, C. McClure and W. R. Neill.—p. 513.
Phlebothrombosis: Incidence and Treatment. R. M. Taliaferro.—p. 516.
*Use of Pyrahexl in Treatment of Alcoholic and Drug Withdrawal Conditions. L. J. Thompson and R. C. Proctor.—p. 520.
Massive Gastrointestinal Hemorrhage Due to Intestinal Hemangioma: With Case Report. J. R. Gamble Jr. and H. A. Albertson.—p. 524.

Pyrahexl.—Pyrahexl is a synthetic substance resembling marihuana. It was first used by the authors to treat patients with symptoms of depression; but as results were disappointing, the drug was tried on patients after an alcoholic episode and after drug withdrawal. In a series of 101 patients, of whom 70 were in postalcoholic states and 6 were formerly addicted to, or in the habit of taking barbiturates, 6 morphine, 4 dihydromorphinone (Dilaudid) hydrochloride, 12 meperidine (Demerol) hydrochloride, 2 a drug containing alkaloids of opium (Pantopon), and 1 paregoric, results were good, especially in regard to those in the postalcoholic state. Pyrahexl was administered in 15 mg. capsules; three capsules were given daily for the first four to six days. The action of the drug became evident in 30 minutes to 2 hours. Marked physiological and psychological improvement and eventual recovery occurred in 59 (84.28%) of the 70 patients in the postalcoholic state. Positive results of varying degrees were obtained in 4 out of 6 cases of barbiturate addiction, in 2 out of 6 of morphine addiction, in 3 out of 4 of dihydromorphinone addiction, in 10 out of 12 of meperidine addiction, and in the 2 of Pantopon and 1 of paregoric addiction. Pyrahexl did not give rise to a biological or physiological dependence, and its discontinuation did not result in withdrawal symptoms. Except in two patients addicted to meperidine who showed no response to pyrahexl, who were long-term users, and who had had previous treatment, the factors causing some patients and not others to respond to pyrahexl are not accounted for, unless an idiosyncratic reaction is assumed.

Northwest Medicine, Seattle

52:807-898 (Oct.) 1953

ACTH and Cortisone: Physiologic and Clinical Considerations. R. C. Manchester.—p. 825.
Office Diagnosis of Operable Congenital Heart Lesions. R. Tidwell, R. Rushmer and R. Polley.—p. 829.
Physiologic Position for Delivery. F. H. Howard.—p. 830.
*Why Solid Foods for Newborn? F. H. Douglass.—p. 832.
Spontaneous Rupture of Esophagus. A. B. Halliday.—p. 834.
Transpyloric Prolapse of Redundant Prepyloric Gastric Mucosa. J. B. Morris.—p. 836.
Foreign Body Removal of Al-Ni-Co Magnet. J. L. Hansen.—p. 839.

Why Solid Foods for the Newborn?—Douglass points out that many mothers are anxious to give their newborn infants finely divided complex foods as early as two weeks after birth. He feels that the gastrointestinal tract of infants has not changed with the homogenization of foods. Enzymes for all simple foods, except starches, apparently are available, even before birth, but pancreatic amylase remains relatively deficient for some months of early infancy. Ptyalin is present in the saliva of newborns but only in small amounts. It takes five to seven weeks for salivary glands to develop enough to produce noticeable saliva. In the stomach, both free and total acids are high for the first two days and then rapidly fall off. They do not recover until after one month. Although infants may tolerate many formula modifications, none has ever surpassed nature's product, breast milk. The best substitute for breast milk is cow's milk modified to the approximate composition of breast milk. The healthy newborn, fed a formula simulating breast milk, will be happy and double its birth weight in four months. No other food is needed for the first three months. Addition of cereals, vegetables, fruits, meats, and other substances in no way improves the health or well being of the baby. It may traumatize the intestinal mucosa or even sensitize the infant to some protein products. Many believe that early feeding of complex foods is responsible for many of the allergies of today. Many mothers are giving their babies cereal and tell their physicians about it afterwards. One cereal food often given as the first one contains corn, oats, wheat, iron, beef bone, salt, alfalfa, and yeast. Two tablespoonfuls of the cereal would yield 17 calories or less than would 1 ounce of milk. If nature had intended a newborn to digest such a complex mixture, she would have provided the infant with a more mature gastrointestinal tract. There is no reason to hurry; the infant's gastrointestinal tract must be trained and used within its limitations, if it is to act efficiently.

Pennsylvania Medical Journal, Harrisburg

56:865-944 (Oct.) 1953

Thyroiditis: Acute and Chronic. W. Menin, C. H. Kravitz and B. Greenspan.—p. 885.
Scleredema Adultorum: Report of One Case Treated with Cortisone Acetate. I. Zugerman and G. F. Parrott.—p. 890.
*Acute Ulcerative Endocarditis with Overwhelming Septicemia Due to Salmonella Choleraesuis. N. M. Wall and R. E. Hobbs.—p. 892.

Acute Ulcerative Endocarditis Due to Salmonella Choleraesuis.—The case presented by Wall and Hobbs was that of a man, aged 50, who had been treated for an upper respiratory infection for three days prior to being admitted to the hospital with a diagnosis of pneumonia. The illness began with chills and fever while at work. His physician gave him penicillin and chlortetracycline (Aureomycin), but at the end of three days his temperature was over 102 F and pneumonia had developed. The patient was allegedly susceptible to frequent upper respiratory infections, for which he was given a series of "cold vaccine" injections for three weeks prior to hospitalization. He was a machinist in a railroad car shop, and he farmed a small piece of ground on which there was a vegetable patch, a few chickens, and a cow. Water was supplied from an outside well. A blood culture taken on admission was positive at the end of 24 hours for a gram-negative bacillus, which gave the reactions of a Salmonella-like organism and was later identified as Salmonella choleraesuis. A roentgenogram of the chest showed changes consistent with acute bronchopneumonia. An electrocardiographic record gave evidence of coronary insufficiency. The clinical course was extremely stormy and terminated in death 16 days after the man was admitted to the hospital. Large doses of chloramphenicol used along with other antibiotics were of no avail. Necropsy revealed two large ulcerating vegetations present at either end of the mitral valve. Smears of the vegetations showed numerous gram-negative bacilli. Cultures yielded a growth of S. choleraesuis. While there was no conclusive proof that the Salmonella lesion originally entered through the pulmonary tract, at least, clinically, it was the first system involved. The pulmonary route is a rare source of entry for a Salmonella infection. The portal of entry in the majority of cases is the intestinal tract.

Plastic & Reconstructive Surgery, Baltimore

12:167-224 (Sept.) 1953

Skin Grafts in Reconstructive Surgery of Hand. S. M. Dupertuis.—p. 167.
Free Skin Grafting Within Mouth. F. A. Figi and J. K. Masson.—p. 176.
New Compression Clamp to Test and Occlude Circulation in Pedicle Flaps. T. R. Broadbent, F. W. Masters and K. L. Pickrell.—p. 187.
*Use of Premaxillary Flap in Repair of Bilateral Cleft Palate. H. E. Coe.—p. 194.
Technical Aid in Pharyngeal Flap Operation. R. H. Walden, L. R. Rubin and A. A. Diecidue.—p. 198.
Reconstruction of Ear Lobule. G. M. Carver Jr.—p. 203.
Prominent Ears: Modification of Dr. Forrest Young's Technic. A. F. Borges.—p. 208.
Accurate Identification of Colorless Solutions to Prevent Chemical Sloughs. K. Pickrell, F. Masters, N. Georgiade and C. Horton.—p. 211.

Use of Premaxillary Flap in Bilateral Cleft Palate.—Coe points out that one of the many problems encountered in the treatment of bilateral cleft palate is that of closure of the opening immediately posterior to the premaxilla. The literature on cleft lip and palate contains many solutions of this problem, among which are the excellent but somewhat complicated method of Victor Veau, the reflecting of flaps from the base of the vomer and the nasal septum, the fitting of the premaxilla back against the united hard palate or the ends of the alveoli, and the use of dental prostheses. For over 20 years, Coe used these methods with varying success but was generally dissatisfied with the results. In some patients, the floor of the nostril is composed of soft tissues rather than bone; in others, the central incisor teeth erupt in marked lingual occlusion or even into the nostril; and in some, the premaxilla may be extremely moveable, and at times a prosthesis may be necessary. About 10 years ago, Coe began to use a flap from the posterior surface of the premaxilla in a somewhat different manner. The usual lateral mucoperiosteal flaps are raised, and, if they do not permit closure of the anterior end of the cleft, the size of the remaining defect is estimated and a flap laid out on the posterior surface of the premaxilla with its base at the nasal septum. This flap is larger than the defect, and the location and size of the pedicle insures excellent blood supply. The flap is reversed with its mucous surface toward the nasal cavity and held beneath the ends of the lateral flaps with stitches bringing the raw surfaces of all flaps in broad contact. The edges of the lateral flaps are then united over the raw surface of the premaxillary flap. This procedure does not close the alveolar clefts, which require separate treatment either at the same time or later, but in a high percentage of cases it does give a satisfactory closure of the troublesome opening. Coe used this method 27 times in 23 cases. In 18 of the 23 patients, the closure was highly satisfactory. The author makes no claim regarding the originality of this method, pointing out that it is merely a modification of well-recognized and accepted principles.

Postgraduate Medicine, Minneapolis

14:273-368 (Oct.) 1953

Experimental Studies on Use of Large Volumes of Saline in Therapy of Traumatic Shock. S. M. Rosenthal.—p. 273.
Tumors of Colon. G. W. Crile Jr. and R. B. Turnbull.—p. 282.
Myotonia Atrophica: Clinicopathologic Review with Report of 5 Cases. R. D. Trevathan and A. E. Hussar.—p. 290.
Surgical Treatment of Diverticulitis. E. S. Judd Jr.—p. 297.
Surgical Treatment of Hydatid Cyst of Liver. Z. Neuman.—p. 304.
Coccidioidomycosis. L. Hyde, C. Pokorny and B. Hyde.—p. 306.
Cancer of Stomach. S. O. Hoerr.—p. 311.
Cardiac Clinic on Hypertension. A. M. Master.—p. 317.
Recent Developments in Management of Peptic Ulcer. F. H. Lahey.—p. 323.
*Spontaneous Cerebral Hemorrhage of Congenital Origin in Pregnancy. C. L. Sullivan, H. Minkel, E. Campbell and J. H. Graham.—p. 329.
Treatment of Peripheral Vascular Diseases: I. Arterial Diseases. R. R. Linton.—p. 335.
Problem of Diarrhea. J. R. Ross.—p. 337.
Glycogen Disease. S. Van Creveld.—p. 342.
Diagnosis of Acute Poliomyelitis. C. G. Grulee Jr.—p. 347.

Spontaneous Cerebral Hemorrhage in Pregnancy.—The case reported by Sullivan and associates was that of a 23-year-old primigravida who was admitted to the hospital in the 41st week of pregnancy with a history of ruptured membranes of 12 hours' duration and no labor. The prenatal course had been uncomplicated by toxemia. She had been seen on the day prior to admission, at which time her blood pressure was 128/72 mm. Hg and the urine did not contain albumin. The onset of hemorrhage was sudden and without prodromal symptoms. Within 10 minutes, the attending physician returned to the patient's room and found her writhing about and complaining that she felt as if an ax had been driven into her head. The blood pressure was 170/90. On the basis of the history and the findings, a diagnosis of ruptured cerebral aneurysm of congenital origin was made and a diagnostic lumbar puncture performed. The spinal fluid pressure was 400 and the fluid pink-tinged. Within five minutes the patient became unconscious, and within a half hour the blood pressure was 220/100. The patient was given oxygen by mask, and 45 minutes after the onset of the hemorrhage there was a sudden cessation of respiration; the pulse remained slow and forceful. One hour after cessation of respiration the patient's condition began to deteriorate further, with increasing cyanosis and a thready, rapid pulse. The fetal heart rate dropped precipitously, and, with the patient in bed and without anesthesia, a cesarean section was performed; a live baby boy was delivered. At the end of 45 hours, there was a sudden vascular collapse with death. At no time during this episode was neurosurgical interference considered feasible by the attending neurosurgeon and neurologist. The final diagnosis on the basis of a necropsy was congenital vascular abnormality with spontaneous rupture into subarachnoid space and right temporal lobe. The authors point out that spontaneous subarachnoid hemorrhage readily can be mistaken for a fulminating eclamptic state. The symptoms of spontaneous subarachnoid hemorrhage are exactly the same as those of eclampsia, namely, headache and/or coma and convulsions, albuminuria, hypertension, and altered nitrogen metabolism. The one differential point lies in the bloody contents of spinal tap of subarachnoid hemorrhage. Spontaneous cerebral hemorrhage of congenital origin is reported in 1% of all autopsies and accounts for 2% of all sudden deaths which occur in the pregnant and the nonpregnant state alike. The authors believe that deaths during pregnancy are too readily ascribed as due to the pregnant state. Spontaneous cerebral hemorrhage of congenital origin in normal pregnancy has been described in 30 other cases; the one reported here brings the total to 31. The maternal and infant mortality rates were 52% and 29% respectively. This is approximately the same maternal mortality rate as that reported for this syndrome in the nonpregnant state.

Radiology, Syracuse, N. Y.

61:317-472 (Sept.) 1953

Use of Delayed Films in Bronchography. H. L. Abrams, G. Hencky and H. S. Kaplan.—p. 317.
Pulmonary Manifestations of Leptospirosis. C. M. Silverstein.—p. 327.
Roentgen Study of Urethrovesical Relationships in Female Urinary Stress Incontinence. C. P. Hodgkinson and H. P. Doub.—p. 335.
Cystitis Emphysematosa: Review of Literature and Report of Four Cases Diagnosed by Roentgen Examination. J. E. Faingold, C. O. Hansen and L. G. Rigler.—p. 346.
Evaluation of Lateral Atlanto-Axial Displacement in Injuries of Cervical Spine. G. Jacobson and D. C. Adler.—p. 355.
Jejunogastric Intussusception. C. P. Wisoff.—p. 363.
Pyloric Antral Mucosal Diaphragm: Report of Case. K. E. Gross and M. W. Durham.—p. 368.
Roentgenographically Characteristic Adenocarcinoma and Leiomyosarcoma in Same Stomach. C. V. Cimmino.—p. 373.
Situs Inversus of Stomach. M. A. Almy, F. H. Volk and C. M. Graney.—p. 376.
Radiographic Demonstration of Localized Mesenteric Thrombosis: Case Report. H. A. Cregg and F. G. Smith.—p. 379.
Preliminary Observations Regarding Value of Very Fine Focus Tube in Radiologic Diagnosis. E. H. Wood.—p. 382.
Thiouracil Modification of Effect of Radioiodine (I^{131}) on Thyroid. R. Rugh.—p. 391.
Selective Shielding Against Roentgen Radiation. T. J. Wang.—p. 401.
New Device for Radiographic Measurements. H. J. Machanic and B. Lieberman.—p. 405.
Design and Construction of Simple Applicator for 1,000 Curies of Cobalt 60. R. H. Neil, W. E. Costolow and O. N. Meland.—p. 408.
Late Effects of Roentgen Irradiation: I. Studies on Rats Irradiated Under Anoxic Anoxia. L. R. Bennett, S. M. Chastain, J. S. Flint and others.—p. 411.

Southern Medical Journal, Birmingham, Ala.

46:937-1040 (Oct.) 1953

Treatment of Urethritis in Women: New Etiological Concept. C. Eberhart, J. Hill and J. Brannen.—p. 937.
Cerebral Angiography: Diagnostic Aid in Study of Diseases of Brain. I. O. Dein, L. L. Levy, R. P. Schmidt and E. Roseman.—p. 942.
Oral Procaine in Heartburn and Other Functional Upper Gastrointestinal Symptoms. B. G. Oren.—p. 946.
Adult Periosteal Tuberculosis: Case Report. H. E. Hipps.—p. 953.
Emotional Visualization Technic. R. V. Seliger.—p. 955.
Streptomycin as Probable Etiologic Agent for Subdeltoid Bursitis. B. F. Bradford.—p. 960.
Spontaneous Rupture of Esophagus: Report of Four Cases. D. W. Hayes.—p. 962.
*Virchow-Troisier Node: Occasional Conspicuous Manifestation of Gallbladder Cancer. V. A. McKusick.—p. 965.
Cesarean Sections which Should Have Been Done. S. H. Wills and J. Moore.—p. 968.
Immediate Treatment of Incomplete Abortion: Review of 500 Patients Treated by Surgical Evacuation of Uterus. O. L. Davidson, W. P. Maury and J. L. Seale.—p. 972.
Aureomycin in Preoperative Preparation of Vagina. O. DeLozier and L. V. McVay Jr.—p. 976.
Epidemiology of Car Window Accidents. M. S. Thompson and G. H. Chambers.—p. 979.
Executive Health Examinations. J. P. Baker, H. C. Ballou, W. T. Hall and others.—p. 984.

The Virchow-Troisier Node in Cancer of Gallbladder.—McKusick says that within a period of a few months three cases of carcinoma of the gallbladder with Virchow-Troisier nodes were observed at the Johns Hopkins University Hospital. In two of the patients, the appearance of this metastasis was one of the earliest and most conspicuous features of the gallbladder carcinoma. The literature on the Virchow-Troisier node, which is also known as the signal or sentinel node, is briefly reviewed. Virchow first called attention to the association of an enlarged supraclavicular node with carcinoma of the stomach in 1848; and Troisier in 1889 emphasized a more general relationship to intra-abdominal carcinoma. It is now recognized that cancers arising in a variety of sites can produce this sign. One study disclosed 122 cases with metastasis in the Virchow-Troisier node among a total of 4,365 cases of carcinoma, but neither this nor the review of similar case material in Sweden disclosed Virchow-Troisier node metastasis in cancer of the gallbladder. However, McKusick mentions several other authors who observed cases similar to the three described here.

Surgery, St. Louis

34:635-802 (Oct.) 1953

Results of Operative Treatment of Acute Perforated Peptic Ulcer. L. T. Palumbo and G. M. Rugtiv.—p. 635.
Autopsy Survey of Peptic Ulcer Associated with Other Disease: Review of Related Etiological Factors Concerned. F. B. Mears.—p. 640.
Observations on Preparation of Hyperthyroid Patients for Subtotal Thyroidectomy with Propylthiouracil. S. P. Asper Jr.—p. 655.
*Adrenalectomy for Hypertension: Advantages of the Anterior Abdominal Approach. R. F. Bowers, F. H. Knox Jr. and B. R. Gendel.—p. 664.
*Use of Aortic Occlusion in Abdominal Surgery with Report of Two Human Cases: Preliminary Report. B. H. Burch, D. W. Traphagen and M. J. Folkman.—p. 672.
Experimental Augmentation of Coronary Flow by Retardation of Arterial Pressure Pulse. A. Kantrowitz and A. Kantrowitz.—p. 678.
Closed Lower Leg Amputations in Arterial Insufficiency. W. S. Edwards and R. R. Linton.—p. 688.
Critical Analysis of End Results in Fractures of Femoral Shaft Treated by Intramedullary Nailing. E. A. Brav.—p. 693.
Axillary Gland Dissection with Preservation of Pectoral Muscles for Carcinoma of Upper Extremity. H. C. Spear.—p. 701.
*Nonsimultaneous Bilateral Carcinoma of Breast. T. B. Hubbard Jr.—p. 706.
Cholescintigram: Preliminary Report. E. T. Yuhl, L. A. Stirrett, M. R. Hill Jr. and J. M. Beal.—p. 724.
Surgical Correction of Panniculus Adiposus Abdominis. H. G. Moore Jr. and H. N. Harkins.—p. 728.
Excretion of Antibiotics, Dyes, and Radioactive Substances Through External Pancreatic Fistula. P. C. Rumore, G. A. Olander and C. B. Puestow.—p. 735.
An Evaluation of Esophagitis in Dogs Following Heller and Gröndahl Operations With and Without Vagotomy. E. D. Geever and K. A. Merendino.—p. 742.

Adrenalectomy for Hypertension.—Bowers and his associates set up a protocol for the study of the benefits from adrenalectomy in severe hypertension. The patients were selected by the cardiologist, who insisted on the presence of the following factors: (1) uncontrollable malignant hypertension or (2) chronic hypertension in patients in whom organic changes are unquestioned and in whom a prognosis of death within one year is anticipated. The four systems, brain, blood vessels, heart, and kidneys, were studied, and all patients showed organic changes in all four systems. Encephalopathy with cerebral accidents, blinding from choked disk, and episodes of cardiac decompensation or of coronary disease do not contraindicate adrenalectomy for hypertension, unless the cardiac condition is so poor that temporary improvement is not possible. Poor kidney function appears to be the only real contraindication; it was learned that operation involves grave danger if urea clearance is less than 50%. The authors decided to perform a two stage adrenalectomy, leaving a small piece of adrenal tissue on the left side and removing the entire right adrenal. A part of the left adrenal was left because the best blood supply seemed to exist in the left lower pole. While a lumbar, abdominal, or thoracolumbar approach is possible for adrenalectomy, the abdominal approach permits palpation of both adrenals through one incision, so that the operator knows whether a tumor exists in either gland before any adrenal tissue is removed. The authors describe the technique for left partial and for right total adrenalectomy and say that the interval between stages varies according to the condition of the patients, but the average is two to four weeks. Four postoperative deaths occurred in 23 cases, when experience with this method was still very limited. A fifth fatality occurred about two months after operation. There has been only one instance of failure to reduce the systolic and diastolic pressures to normal. Eighteen patients are being followed. Many of the patients have survived more than one year, but the period is not long enough for satisfactory evaluation. All patients, except two, require cortisone maintenance therapy ranging from 3 mg. every three days to 25 mg. daily; one requires 60 mg. daily. Substitution therapy is not expensive, costing about 35 cents per day. A staff competent to handle Addisonian crisis must be available. Good results are noted in malignant hypertension as well as in chronic cases with marked arteriosclerosis. The patient should be told that treatment involves endurance of a controllable, mild hypoadrenal state instead of a fatal hypertensive state.

Use of Aortic Occlusion in Abdominal Surgery.—At present palliative surgical resections are done whenever there is a single metastasis to the liver, because attempts at hepatic resection are usually followed by uncontrollable hemorrhage. Burch and associates studied the effect of aortic occlusion in resection of the liver. In the past either temporary or permanent aortic occlusion has been reserved for use in those patients in whom collateral circulation had been previously established; it had never been used to facilitate surgical procedures, other than those concerned with the aorta itself. The authors planned procedures to determine the time that the abdominal aorta might be occluded just above the celiac axis. Dogs were prepared by intravenous administration of pentobarbital (Nembutal) and were maintained throughout the surgical procedures on a mixture of oxygen and ether. The aorta above the celiac axis and the portal vein were occluded for 20 minutes without fatality. Subtotal hepatectomy was easily accomplished without blood loss. A maximum safe time of aortic occlusion was found to be 20 minutes; when the occlusion was extended to 30 minutes, fatalities occurred. When occlusion lasted 40 minutes, the mortality was 100%. In order to increase the safe time of occlusion beyond 20 minutes, the aorta and portal vein were occluded for 10 minute intervals to allow time for recovery before the next clamping. Judging from the appearance of the vessels along the stomach, at least 20 minutes was required for the circulation to return to normal, but the occlusion could be extended to 40 minutes without a fatality. Some change was noted in each animal subjected to aortic and portal vein occlusion, but the changes were most profound in those that died. In all animals surviving aortic occlusion the histological findings were limited to the kidney and consisted of casts in the collecting tubules and minimal degeneration of the tubular epithelium. In the animals dying as a result of aortic occlusion, changes were found in the liver and kidney. Death was believed to be at least partly due to liver failure. The course of the animal experiments induced the authors to employ aortic and portal vein occlusion in two patients in whom the left lobe of the liver was resected. One patient was discharged on the seventh day. The second patient died several days after a 12 in. (30.48 cm.) loop of necrotic jejunum had been resected on the fifth day after the liver operation. Autopsy revealed gangrene of the entire small bowel, which may have been caused by aortic clamping. Postoperative heparinization is suggested for elderly patients after temporary aortic occlusion. The authors feel that aortic occlusion is a possible solution when uncontrollable hemorrhage is encountered during hazardous abdominal procedures or secondary to trauma.

Nonsimultaneous Bilateral Carcinoma of Breast.—The occurrence of carcinoma in the remaining breast after radical removal of the other breast for cancer is familiar to most surgeons. The question has been raised whether the incidence of later carcinoma is sufficiently great to warrant routine prophylactic removal of the contralateral breast at the time of treatment of the first carcinoma. The worth of such a program would depend on a comparison of the number of lives saved and the mortality and morbidity (both physical and mental) incurred with such a procedure. Hubbard says that at Wangensteen's suggestion this problem was investigated by (1) a study of the incidence of nonsimultaneous bilateral breast cancer and (2) a study of the characteristics of patients with such bilateral cancers. Hubbard in this report is concerned chiefly with the problem of nonsimultaneous bilateral cancer. At the University of Minnesota Hospitals the case records of 272 consecutive patients with a microscopically proved breast carcinoma were studied. Summarizing these studies the author says that, when a woman has had a cancer of one breast, the risk of cancer in the opposite breast cannot be ignored. The prophylactic removal of the asymptomatic breast in patients with one breast cancer has revealed minute unsuspected cancers in 2 of 16 cases. A follow-up study of patients operated on for carcinoma of the breast at least 10 years before reveals an incidence of nonsimultaneous bilateral cancer of 3.4%. This is greater than that found in the population at large with regard to women under 50 years of age at the time of the first cancer, but not with regard to women over 50 years of age at the time of the first cancer. Age distribution shows a slight shift to the younger age groups in bilateral cancers, compared to unilateral cancers. However, per unit of time, younger women have not been shown to undergo a significantly greater risk than those who are older. The satisfactory survival rate after the second cancer suggests that many of the latter are true primary lesions. Patients with bilateral breast cancer show no unique characteristics in regard to the location of the tumors, axillary node involvement, sexual history, tumor type, or benign breast lesions. There is some strongly suggestive, though inconclusive, evidence that pregnancy after a single breast cancer may predispose to cancer in the other breast. Patients with bilateral cancer appear to have a significantly greater number of mothers and sisters with breast cancer than do those with unilateral carcinoma. Prophylactic simple mastectomy of the opposite breast is recommended for those patients who have an operable breast cancer and who (*a*) have a family history of breast cancer or (*b*) are premenopausal and desire to become pregnant. All other patients with unilateral breast cancer, not included in these two groups, should not have a routine prophylactic simple mastectomy, but should be followed carefully with frequent examinations of the remaining breast.

Texas Reports on Biology and Medicine, Galveston

11:377-582 (No. 3) 1953. Partial Index

Studies of In Vitro Conversion of Carotene to Vitamin A. J. G. Bieri and C. J. Pollard.—p. 402.
Vasoconstriction Action of Hyaluronidase in Frogs and Dogs. F. E. Emery.—p. 412.
Levels of X-Radiation Exposure Required to Destroy Immunity to Salmonella Typhimurium. J. D. Fulton and R. B. Mitchell.—p. 417.
Creativeness in Medicine. A. Gregg.—p. 440.
*Spontaneous Neoplasia in Female Parabiotic Rats. C. E. Hall, O. Hall and A. W. B. Cunningham.—p. 448.
Microcolorimetric Method for Determination of Glucose. S. C. Harvey and V. Higby.—p. 489.
Electron Microscopic Studies of Virus of German Measles (Rubella). R. L. Reagan, N. Strand and A. L. Brueckner.—p. 502.

Spontaneous Neoplasia in Parabiotic Rats.—When rats are placed in parabiosis many of the pairs succumb to a condition that has been named "parabiotic intoxication." This condition results in one of the partners becoming small and anemic, whereas the attached parabiont becomes flushed and hyperemic. Recently it has been observed that, in about 40% of the pairs that do not succumb to intoxication, hypertension, accompanied by widespread cardiovascular lesions, and occasionally arthritis develops in one. The present communication is concerned with neoplasia in parabiotic rats. In 20 pairs of female parabiotic rats maintained for approximately a year in parabiosis, 5 pairs developed neoplasms. Three of these were of the lymphosarcoma type and in each case were confined to one partner. In the remaining two cases, a carcinoma and a giant cell tumor of periosteum or tendon sheath, respectively, both partners were involved. No tumors were detected in 34 rats, but 15 of the pairs are still alive and are being observed for tumor formation. It is concluded that the state of parabiosis predisposes in some as yet undetermined way to tumor formation. In speculating about factors responsible for the high incidence of neoplasia in parabiotic animals the authors point out that, of the five tumors encountered, three were lymphosarcomas. The lymphatic organs are intimately concerned in reactions to stress, and it may be that the stress is at least a contributing factor to lymphatic tumor development. It has been noticed that rats placed in parabiosis show early involution of lymphoid tissues. That this may be provocative of later tumor development is suggested by the observations that x-irradiation of mice, a process that produces lymphoid involution, also produces lymphomas.

U. S. Armed Forces Med. J., Washington, D. C.

4:1387-1542 (Oct.) 1953. **Partial Index**

Psychiatry in Korean Campaign: Historical Review. A. J. Glass.—p. 1387.
Military Aspects of Diagnosis of Epilepsy. H. S. Colony and B. I. Kahn.—p. 1412.
Treatment of Neurogenic Bladders with Banthine. R. M. Fenno and C. C. Dodson.—p. 1417.
Physiologic Effects of Certain Explosives and Chlorinated Hydrocarbon Solvents. J. H. Foulger.—p. 1425.
Incidence of Rubella at Army Post. H. Sandberg and I. H. Simmons.—p. 1434.
Effect of Oral Estrogens on Serum Cholesterol and Total Lipids. W. C. Marett and J. R. Vivas.—p. 1439.
Diphtheria Outbreak in Alaska. V. H. Alder.—p. 1449.
Postcholecystectomy Syndrome. R. T. Gants.—p. 1457.
Army Preventive Medicine Technicians: Their Schooling and Background. J. D. Flintjer.—p. 1468.
Delayed Rupture of Spleen: Report of Three Cases. T. A. Kirk Jr. and L. L. Haynes.—p. 1480.
Retrocaval Ureter. C. J. Van Tassel Jr.—p. 1486.
Pituitary Eosinophilic Adenoma: Report of Case with Multiple Complications. M. Presti, R. G. Rigler and F. B. Clare.—p. 1491.
*Generalized Vaccinia in Presence of Diffuse Dermatitis. R. J. Hall.—p. 1503.
Supernumerary Intrathoracic Rib: Case Report. W. M. Marbut and W. L. DeGinder.—p. 1507.
Eosinophilic Granuloma of Bone. R. G. Lester.—p. 1511.

Generalized Vaccinia in Presence of Diffuse Dermatitis.—After commenting on the relative rarity of generalized vaccinia as a complication of vaccination for smallpox, Hall presents the history of a man, aged 21, who had never been immunized for smallpox prior to entering military service. He was vaccinated on Aug. 30, 1952, with no "take." In early December he noted a pruritic oozing eruption in the left axilla, which by January had spread to the groin, perineum, neck, and face. He was revaccinated at a replacement depot on Feb. 7, 1953, in spite of the dermatitis. The rash became worse, and treatment with penicillin was started at his unit dispensary on Feb. 13. The next day he complained of malaise, headache, and chills. His headache became severer, and a red papular rash appeared on his face. When he was admitted to the dispensary two days later, his temperature was 104 F (40 C). The vaccination at this time was pustular, surrounded by a large area of erythema and edema, and beginning to form a superficial crust. Since the high temperature persisted, he was hospitalized on Feb. 19, when innumerable pustular encrusted lesions, discrete and confluent, were present over his face, eyelids, neck, axillas, groins, genitalia, and popliteal areas. Massive edema of his face prevented opening the eyes; both auditory canals were draining. A diagnosis of generalized vaccinia was made. Antibiotic therapy was instituted. A diffuse morbilliform rash appeared on the third day and rapidly faded during the next two days. The cutaneous lesions were exposed to the air to facilitate drying. The edema had almost completely subsided by the fifth hospital day, and crusting of the lesions started. Improvement continued, and almost complete clearing occurred by the 21st hospital day. Minimal scarring resulted. The absence of immunity from previous vaccination and the concomitant dermatitis appeared to be related to the occurrence, severity, and distribution of the generalized vaccinia. Persons with active skin lesions should not be vaccinated.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

61:559-622 (Oct.) 1953

Hyperparathyroidism. L. D. Heaton and R. Cohn.—p. 559.
Mechanisms of Gas Patterns in Intestinal Obstruction. D. Metheny and V. O. Lundmark.—p. 566.
*Effect of Ligation of Major Divisions of Celiac Axis in Portal Cirrhosis. W. K. Jennings and J. P. Blanchard.—p. 569.
Acute Pseudomembranous Entercolitis Following Surgery of Colon. O. H. Pflueger and M. B. Black.—p. 580.
Villous Adenomas of Large Intestine. R. V. Byrne.—p. 589.
Experiences with Transthoracic Removal of Renal and Adrenal Tumors. T. R. Montgomery and M. S. Rosenblatt.—p. 593.
Problems in Management of Acute Severe Burn. F. P. Shidler.—p. 599.
Preliminary Experimental Observations of Nature, Extent and Repair of Gunshot Injuries of Aorta. H. G. Moore Jr., L. M. Nyhus, E. A. Kanar and H. N. Harkins.—p. 607.

Ligation of Branches of Celiac Artery in Portal Cirrhosis.—Four men and three women between the ages of 47 and 77 with portal cirrhosis were treated by ligation of two or more branches of the celiac artery. In the first two, only the hepatic and splenic arteries were ligated, while in the others splenic, hepatic, and left gastric arteries or left gastric and hepatic arteries were ligated. Of the seven patients, two are alive and free of symptoms at 24 months and six months, respectively, after the surgical intervention. The remaining five died within from five days to five months after the surgical intervention. In 46 cases of portal cirrhosis collected from the literature in which hepatic and splenic artery ligations were performed, 21 patients survived the surgical intervention for an average period of 14 months during which they were relieved of the symptoms for which the operation was performed. Ligation of the hepatic, splenic, and left gastric arteries is best accomplished through the omental bursa with the stomach rotated upward 180 degrees. A careful search should be made for anomalous, or accessory, hepatic arteries. The frequency of such an anomaly must be borne in mind when attempting to reduce radically the inflow of arterial blood into the liver. Insufficient time has passed to permit accurate appraisal of the effectiveness of hepatic, splenic, and left gastric artery ligations in the treatment of portal cirrhosis, but the experimental work of Dock, Berman, Markowitz, and others, together with the encouraging results observed in a limited number of patients otherwise doomed to an early death, marks the multiple artery ligation procedure as one which deserves thoughtful indulgence. Active bleeding, continued jaundice, and an enlarged liver should be regarded as contraindications. The patient with an atrophic liver and well-established collateral circulation may expect to derive the greatest benefit from this method. The operation is much less formidable than those in which venous anastomoses are performed and can be employed for patients who are not suitable risks for a "shunt."

Wisconsin Medical Journal, Madison

52:541-584 (Oct.) 1953

Mesenteric Vascular Occlusion. A. W. Overgard and J. W. Johnson.—p. 541.
Aerosol Therapy in Children. F. C. Stiles.—p. 543.
*Skiing and Heart Strain. A. A. Holbrook.—p. 546.
Development of Health Examination Programs for Employees of Wisconsin Schools. A. A. Pleyte and D. Sternitzky.—p. 549.

Skiing and Heart Strain.—Holbrook asserts that skiing at high altitudes subjects the heart to types of strain that can precipitate attacks of angina pectoris in susceptible persons. These factors include breathing cold air, especially the cold wind incident to the downhill run, and the excitement and emotional stresses from which neither expert nor beginner is immune. The net result is a strain on the heart, since the demand for oxygen by the myocardium is greater than the coronary arteries can supply. When the amount of oxygen is inadequate, ischemia results. Depending on the degree of ischemia, changes in the T-waves of the electrocardiogram usually occur, and the patient may experience pain. If the hypoxic state of the myocardium is profound and persistent, organic damage may involve focal areas and produce deviations in the RS-T segments of the electrocardiogram, the so-called "strain pattern." After reviewing the literature on this problem, the author describes his studies on the effects of violent exercise (squash playing) on the electrocardiograms of seven men of various ages and states of athletic training. Evidences of heart strain were obtained in the three older subjects. A survey to determine the incidence of heart attacks while skiing revealed only one case, and that appeared to have happened incidentally, since the victim had just put on his skis. The author feels that skiing, especially at altitudes above 6,000 ft. (1,840 M.), imposes a strain on the heart. The most likely explanation for the negligible incidence of heart attacks among skiers is that persons with coronary insufficiency either do not ski or, if they do, they ski within their limitations. Members of the audience to which this report was presented informed the author of three cases of fatal heart attacks associated with skiing. Postmortem proof of coronary occlusion, however, was known to have been obtained in only one of them.

FOREIGN

Archiv für Dermatologie und Syphilis, Berlin

196:319-412 (No. 4) 1953. **Partial Index**

Biological Oxidation in Human Skin. I. von Glasenapp and G. Leonhardi.—p. 319.

Comparative Investigations on Free Amino Acids in the Cantharis Blister and in Serum. W. Adam and G. W. Korting.—p. 325.

Contribution to the Problem of True Hermaphroditism. F. Pirner and S. Borelli.—p. 329.

Demonstration of Antibiotic Metabolic Products in Cultures of Fungi Pathogenic for the Skin. P. Höhle.—p. 356.

*Disseminated Postphlebitic Calcifications of the Leg (Calcinosis Subcutanea Postphlebitica). B. Lindner.—p. 403.

Postphlebitic Disseminated Cutaneous Calcifications.—Roentgenograms of the lower extremities occasionally reveal calcified areas, which, when of limited extent, usually are locally related to the vascular system. Sometimes they can be detected by palpation and represent varicoliths in the lumen of varicose veins, or they are calcium deposits in the walls of arteries or veins. In other cases they are disseminated. Exposures in two planes or stratigraphy reveal that the majority if not all calcifications in the lower extremities are limited to the subcutaneous areas. In severe cases they represent the picture of a plane-like disseminated calcinosis of the lower extremities. After observing one case, a systematic search at the dermatological clinic with which Lindner is connected revealed that cases of this type are not so rare as reports might indicate. Twenty additional cases, all in women, were found in the course of one year. Eight of these patients had concrements that differed from the more frequently observed varicolithiasis in that they appeared plane-like not only in the roentgenogram but also on palpation. Clinically, the involved extremities all showed the so-called varicose complex, that is, there were varicosities, ulcerations, eczema, and pigmented areas indicating chronic congestive diapedesis. Most of the women who had this form of calcification were past 60 years of age; all had severe chronic phlebitis; nearly all had had recurrent attacks of acute thrombophlebitis. The concurrence of phlebitis and of cutaneous calcifications indicates pathogenetic relationship. It is possible that metabolic disturbances resulting from venous stasis causes the phleboliths, calcifications of the venous walls and also of the subcutaneous tissues. Phlebographic and histological investigations demonstrated that calcium deposits may occur in the veins, and also outside of the vessels. The name applied to this syndrome regarded as a definite entity is postphlebitic subcutaneous calcinosis.

Archives Françaises de Pédiatrie, Paris

10:785-900 (No. 8) 1953

*External Ventricular Drainage in Intracranial Hypertension of Tuberculous Meningitis. C. Quersin.—p. 785.

Lipoid Nephrosis in Children: Analysis of 15 Cases. M. Lelong, R. Joseph, J. Vialatte, P. Canlorbe and G. Lagrue.—p. 807.

Congenital and Familial Epidermolysis Bullosa. P. Rohmer, E. Schneegans, J. Roederer and A. Haarscher.—p. 828.

Investigation of Mongolism in Northern France: Attempt at Etiopathogenic Study. M. Gérard-Lefebvre, F. Mollet, R. Lefebvre and F. Bernard.—p. 834.

Drainage in Tuberculous Meningitis.—An improved technique, using a polythene tube, of continuous external ventricular drainage of the cerebrospinal fluid for the relief of intracranial hypertension in tuberculous meningitis has been used by the author and his colleagues to perform 77 drainings in 64 children with tuberculous meningitis. Significant amounts of cerebrospinal fluid—200 to 300 cc. daily—were removed from each child. Technical difficulties were reduced to a minimum but could not be eliminated entirely. In this series of 64 patients, 19 were cured and 45 died. In those cured, the hypertension was relieved, as evidenced by a progressive decrease in the amount of fluid being drained. In some patients the amount showed no tendency to decrease. Drainage produced its most spectacular effects—disappearance of headache and vomiting and regression of disturbances in consciousness—on the older children and on the ones in whom the disease had been diagnosed relatively early in its progress. It did not have any significant effects on children who were very young (under 5 years), unconscious, or already definitely comatose. The importance of the drainage method as a factor in the cures effected cannot be evaluated. The fact that many patients remained unconscious despite ventricular drainage shows that intracranial hypertension per se is not as important a cause of critical symptoms as are the neural lesions themselves. For patients in whom the amount of cerebrospinal fluid drained does not significantly decrease within the first 10 days of drainage, a special neurosurgical intervention should be devised (eventually an internal shunt of the cerebrospinal fluid from the meningeal spaces into a cavity of the temporal bone).

Brain, London

76:337-514 (Sept.) 1953

Some Aspects of Human Orientation in Space; Dynamic Nature of Nervous Activity: "Motion Sense," Sense of Direction. W. Gooddy and M. Reinhold.—p. 337.

Ischaemic Lesions in Brain-Stem Associated with Raised Supratentorial Pressure. L. Wolman.—p. 364.

Subdural Haematoma Complicating Intracranial Aneurysm and Angioma. E. Clarke and J. N. Walton.—p. 378.

Stimulation of Medial Surface of Human Cerebral Hemisphere After Hemispherectomy. J. A. V. Bates.—p. 405.

Aberrant Regenerating Nerve Fibers in Injury to Spinal Cord. R. Druckman and W. G. P. Mair.—p. 448.

So-Called Medial Root of Optic Tract Is Essentially Visual Commissure. E. Wolff.—p. 455.

Reaction to Passive Straining of Joints (Bending Reflex) in Patients with Frontal Lobe Lesions. H. Seyffarth.—p. 457.

*Certain Sequelae of Closed Head Injuries: Pathological Basis of "Post-Traumatic Syndrome." A. A. McConnell.—p. 473.

Subdural Air after Pneumoencephalography. A. A. McConnell.—p. 485.

Pyramidal Tract Fibres from Temporal and Occipital Lobes: An Experimental Study in Cat. F. Walberg and A. Brodal.—p. 491.

Note on Fibre Content of Fornix System in Man. H. Daitz.—p. 509.

Sequelae of Closed Head Injuries.—Many patients after apparent recovery from a closed head injury complain of headache, giddiness, and various mental disturbances. The terms "post-contusional state" and "post-concussional state" are not satisfactory, because these symptoms can develop in patients who never had contusion or concussion. The term "post-traumatic state" is now in common use. During the last war large numbers of patients in this state were investigated, and the conclusion was that the patient who complained of headache, with or without the other components of the post-traumatic syndrome, had structural damage to the brain or some sort of a neurosis, or both. There are reasons for rejecting the "neurotic" hypothesis as a complete explanation of the post-traumatic syndrome, because, whatever the personality of the patient, a basic pattern can be discerned in the syndrome—headache, dizziness, inability to concentrate, or faulty memory. McConnell found many years ago that exploration through bilateral burr holes in the skull could yield information not obtained by any other means. He reviews the conditions found in 75 consecutive cases classifiable under "post-traumatic syndrome." In all but 2 cases a pathological condition was demonstrated, and in 68 out of the 75 cases it was possible to remove the lesion. Elevation of intracranial pressure was found in all, except the two cases. The brain appeared tight, with little or no pulsation, and when fluid was found it escaped under pressure from within. When the fluid, or blood, was released the whole appearance of the intracranial state changed. The brain retreated and its pulsations became full and free. The author concludes that the pathological basis of the post-traumatic syndrome is a state of chronic elevation of intracranial pressure, due, in over 80% of patients, to a leakage of cerebrospinal fluid into the subdural space. This fluid accumulation can be demonstrated by the second day encephalogram and removed through burr holes in the skull. However, only an experienced neurosurgeon should perform this operation, because chronic elevation of intracranial tension may be due to any one of many lesions and various complications may arise.

British Journal of Tuberculosis, London

47:189-252 (Oct.) 1953. **Partial Index**

Artificial Pneumoperitoneum in Treatment of Pulmonary Tuberculosis: Late Follow-Up of 101 Patients. J. R. Edge.—p. 202.
Non-Opaque Foreign Bodies Impacted in Glottis, Trachea and Bronchi. N. Asherson.—p. 209.
Bronchography Using Two New Media. N. McSwan and G. W. Allan. —p. 216.
Tuberculous Portal Pyaemia with Splenomegaly. P. O. Leggat, G. P. Jones and P. J. Taylor.—p. 221.
Bronchography: Plea for Use of Suspension of Sulphanilamide in Iodised Oil. P. L. Salinger and H. G. H. Houghton.—p. 225.
Finger Clubbing and Changes in Bronchial Circulation. L. Cudkowicz and J. B. Armstrong.—p. 227.
*Thyroid Enlargement During P.A.S. Therapy. T. W. Davies, D. B. Morgan and J. H. Thomas.—p. 233.

Thyroid Enlargement During Treatment with *p*-Aminosalicylic Acid.—Davies and associates list gastroenterologic upsets, fever, rashes, adenopathy, photophobia, conjunctivitis, renal manifestations, joint pains, peripheral neuritis, liver damage, prolonged coagulation time, hypoprothrombinemia, reduced capillary resistance, purpura, lowered blood potassium, cardiac irregularities, muscular weakness, and alteration of the blood lipase as the undesirable side-effects that have been known to result from treatment with *p*-aminosalicylic acid (PAS). To this list they add thyroid enlargement, which they observed in two patients. The first patient, an 8-year-old boy, was treated with bed rest supplemented by streptomycin hydrochloride (1 gm. daily) and *p*-aminosalicylic acid (18 gm. daily divided in six doses), when a bilateral apical infiltration became reactivated. When the boy was seen three days after completing the therapeutic course of 90 gm. of streptomycin and 1,404 gm. of *p*-aminosalicylic acid, enlargement of the thyroid was noted that was of the generalized type observed during thiouracil medication. The thyroid swelling had become apparent to the patient 15 days earlier, that is, 11 days before the cessation of the *p*-aminosalicylic acid treatment (1,242 gm. having been taken). The thyroid enlargement disappeared 77 days after cessation of therapy. The second patient was a woman, aged 32, in whom enlargement of the thyroid was noted after 990 gm. of *p*-aminosalicylic acid had been taken. In this patient, the thyroid did not return to its original size until 96 days after cessation of treatment. The clinical course of the tuberculous lesion was not influenced by the thyroid enlargement in either of the patients. The authors feel that the antithyroid effect of *p*-aminosalicylic acid should be taken into consideration when assessing improvement as judged by gain in weight. It is also suggested that care be taken when prescribing *p*-aminosalicylic acid for patients with thyroid enlargement.

British Medical Journal, London

2:897-950 (Oct. 24) 1953

*Changes in Mean Stature and Weight of British Children over the Past 70 Years. E. M. B. Clements.—p. 897.
Method for Rapid Estimation of Percentage Oxygen Saturation and Oxygen Content of Blood. O. L. Wade, J. M. Bishop, G. Cumming and K. W. Donald.—p. 902.
Thrombophlebitis Migrans and Carcinoma of Body and Tail of Pancreas. M. H. Oelbaum and S. J. Stritch.—p. 907.
Multiple Myelomatosis with Haematemesis and Melaena. T. B. Williamson.—p. 910.
Intravenous Iron in Rheumatoid Arthritis: Posssible Prognostic Factors. M. R. Jeffrey.—p. 912.
Actinomycotic Pyaemia. J. D. Blainey and E. O. Morris.—p. 913.
Action of Thiouracil and Thyroxine Administration on Adrenal Function. J. Corvilain.—p. 915.
Tuberculin Survey in Stoke-on-Trent. J. S. Miller.—p. 917.
Case of Cor. Triloculare Biatriatum with Survival to Adult Life. D. R. Barry and D. H. Isaac.—p. 921.

Stature and Weight of British Children.—It has been definitely established that in Great Britain adult stature is reached earlier now than it was 70 years ago. In years gone by men belonging to the wealthier classes attained their maximum height at an earlier age than did men of the poorer classes. Recent data for Scotland have shown that the difference in growth rate between the social classes has now been eliminated. The present paper deals with records of the mean stature and weight of British children over the past 70 years. Anthropometric data on children between the ages of 5 to 13 years have been examined for each of the following five periods: (1) the late 19th century; (2) the early 20th century; (3) the period after the first world war; (4) the period before the second world war; and (5) the period after the second world war. It was found that the average stature and weight have increased by from 2.5 to 3.5 in. (6.35 to 8.89 cm.) and from 4 to 11 lb. (1.8 to 5 kg.) respectively over this period of 70 years, the increases being greatest in the older children. The increases found are greater than can be accounted for by systematic and random sampling errors and indicate that, on the average, there has been an acceleration of 18 months' growth. Thus an average 6-year-old child is now of much the same size as one of 7.5 years in 1880. The rate of increase in mean stature and weight is not constant over the years. It begins slowly and is first evident in the lower income group and in the children 5 to 7 years of age in the upper and middle income groups. The rate of increase was greatest in the interwar years, when it was shown by all groups. The upward trend was interrupted during both the first and the second world war. The increase in the mean measurements has been greatest in the lower income group, so that the difference that existed in 1880 between the average measurements of children in this group and the middle income group no longer exists. The differences in stature and weight between average children in the upper and lower income groups were 4 in. (10.16 cm.) and 7 lb. (3.2 kg.) in the late 19th century and 2 in. (5.08 cm.) and 2 lb. (0.9 kg.) in 1947.

Canadian Medical Association Journal, Montreal

69:469-566 (Nov.) 1953

Osler: The Man Himself. G. S. Young.—p. 469.
The Diabetic and His Disease. W. deM. Scriver and J. Trenholme. —p. 477.
*Changing Indications for Collapse Therapy in Pulmonary Tuberculosis. N. Lewin and M. Aronovitch.—p. 481.
Impact of Adrenal Hormones on Treatment of Arthritis. D. Robinson. —p. 486.
Spinal Anaesthesia in Obstetrics. C. C. White.—p. 488.
Sodium Concentration in Drinking Water and Other Fluids and Its Significance in Restriction Sodium Intake. M. H. Ferguson and L. A. Kay.—p. 491.
Ineffectiveness of Expectorants. I. Rose.—p. 494.
Acute Pancreatitis. H. S. Dolan and J. F. Hopkirk.—p. 495.
Flaccid Quadriplegia Associated with Hyperpotassaemia. G. O. Richardson and J. C. Sibley.—p. 504.
Diverticulitis of Colon: Six Year Review. H. S. Ford.—p. 506.
Torsion of Upper Lobe of Right Lung After Pneumolysis. Z. Gorecki. —p. 509.
Plasma Volume, Measured by Iodinated Albumin, and T-1824. L. N. Roberts, J. R. Smiley, G. A. Sears and G. W. Manning.—p. 510.
Gilles de la Tourette's Syndrome. W. P. Mazur.—p. 520.
Emergency Treatment of Continuous Gastro-Oesophageal Haemorrhage. G. A. P. Hurley.—p. 523.

Changing Indications for Collapse Therapy.—In order to assess the change that has taken place with regard to collapse therapy since the introduction of streptomycin and *p*-aminosalicylic acid, Lewin and Aronovitch reviewed the histories of 61 patients with tuberculosis who were treated at a Quebec sanatorium during the last two and a half years. They tried to decide what the treatment of these patients would have been, if these drugs had not been available. They found that they are now much less inclined to institute collapse therapy than they were formerly. They are of the opinion that a clinically healed cavity is a good end-result of the therapy and that a patient could be discharged without considering further therapy after a proper time of observation. They illustrate this with some representative case histories. Of 61 patients with cavities admitted to their sanatorium, 21 showed cavity closure after medical treatment alone. Thirty-one of the 61 patients who would have received collapse therapy before the streptomycin era were spared these procedures. Thus the use of streptomycin and *p*-aminosalicylic acid has made the authors less ready to apply collapse measures early in the patients' illness, and in many cases by so doing they have been able to avoid collapse therapy entirely and at the same time shortened the course of treatment.

Deutsche medizinische Wochenschrift, Stuttgart

78:1457-1488 (Oct. 23) 1953. Partial Index

Physician and Educational Counseling. O. Bossert and Bleckmann. —p. 1457.
Polyneuritis Resulting from Isoniazid Therapy. P. Bünger and H. W. Schulz-Ehlbeck.—p. 1459.
Neutralizing Effect of Gamma Globulin Toward Poliomyelitis Virus Type 2. R. Haas and H. Schweinsberg.—p. 1462.
Strabismus and Its Treatment. A. Meesmann.—p. 1464.
*Treatment of Megaloblastic Forms of Anemia with Vitamin B_{12} Combined with Formylfolic Acid. F. Thedering and H. U. Riethmüller. —p. 1470.

Treatment of Megaloblastic Forms of Anemia.—Of 30 adult patients with pernicious anemia, 14 were given injections of pure vitamin B_{12} and 16 were given injections of vitamin B_{12} combined with formylfolic acid (Eryfol), a chemical intermediate between folic acid and citrovorum factor, for periods up to 22 months. Sixty to 90 mcg. of vitamin B_{12} with simultaneous administration of 20 to 30 mg. of folic acid is the optimum dose for the first injection to be given to patients with pernicious anemia who have not received previous treatment. This same dose should be repeated every eight days until a full hematological remission is achieved. This dose was used for periods up to six months in patients with manifest radicular spinal disease, and in severe cases vitamin B_{12} was given in doses up to 200 mcg. per week. Continued treatment of patients with pernicious anemia required an average dose of 79 mcg. of vitamin B_{12} and 26 mg. of formylfolic acid per month given in two injections at two week intervals. Return of body weight to normal and restoration of work capacity and of vital tonus, in addition to a full hematological remission, were obtained with this large dose maintenance treatment. The tendency to infection was also reduced considerably. A hematological remission could be obtained by both methods of treatment, i. e.; with pure vitamin B_{12} or with vitamin B_{12} combined with formylfolic acid, although somewhat better hematological values were obtained with the combined treatment despite a smaller remission dose given for a shorter period. After combined therapy continued for about one year this method of treatment seems to be slightly superior to that with injection of pure vitamin B_{12} alone. The combined treatment is particularly indicated in patients with pernicious anemia of many years' duration. The risk of spinal cord involvement is not associated with this type of therapy.

Klin. Monatsbl. für Augenheilkunde, Stuttgart

123:385-512 (No. 4) 1953. Partial Index

Proliferating Diabetic Retinopathy in Diabetic Glomerulosclerosis (Kimmelstiel-Wilson). H. Sauer and H. Koch.—p. 395.
Congenital Folds in Retina and Persistence of Vessels in Vitreous Body. G. Mackensen.—p. 417.
Eye Changes in Temporal Arteritis and in Endangiitis Obliterans. E. Meyerratken.—p. 433.
*Chemical Keratoconjunctivitis in Rayon (Artificial Silk) Industry in Saxony. J. Karsch.—p. 440.
*Chronic Intoxication with Pyroxylin Lacquers. R. Schirmer.—p. 449.
Causes of Asthenopic Disturbances in Neo-Light Illumination. H. Schober. —p. 462.

Chemical Keratoconjunctivitis in Rayon Industry.—As an ophthalmologist in a large rayon (artificial silk) factory, Karsch had the opportunity to observe an eye disorder that the workers designated as "spinner's eye" and that is known medically as chemical keratoconjunctivitis. As a rule it begins with sensations of pressure and with burning and piercing pain in the eyes. Photophobia and lacrimation develop gradually. As an indication of involvement of the cornea, colored rings or areas appear around the lights. During the day these persons have the sensation of looking through a veil or being in a fog. The annoying symptoms become more evident when the workers come in contact with the outside air, and sometimes the symptoms appear only on arising in the morning. Examination revealed that some workers have severe and others only very slight irritation of the conjunctiva. There are band-shaped epithelial defects and swellings in the palpebral fissure, and in other cases there is only a slight swelling of the epithelium that appears in the form of a grayish turbidity or stippling. The pupil is somewhat contracted, but this miosis is the result of corneal irritation; the iris itself is not irritated. Clinical observations indicate that this chemical keratoconjunctivitis is caused by hydrogen sulfide, since similar eye changes have been observed in other industries using this chemical. It is probable that carbon disulfide favors the harmful effects of hydrogen sulfide, since the former has a drying effect and thereby influences the threshold of concentration. Prevention of chemical keratoconjunctivitis is mostly a problem of ventilation of the spinning rooms and machines. The contributing role of carbon disulfide was proved by the fact that when warmer air from the washing rooms, which was saturated with carbon disulfide was led into the spinning rooms the incidence of the eye disorder increased.

Chronic Intoxication with Pyroxylin Lacquers.—The cases of intoxication described in this paper occurred in men who for months or years had sprayed or painted parts of machinery with pyroxylin lacquers. The studies reported were brought about by the discovery of acute retrobulbar neuritis in one of these workers, who had had contact with pyroxylin lacquer for about four years. Examination revealed no neurological indications of a systemic disease, but laboratory tests suggested an intoxication with pyroxylin lacquers. Observations on this man led to examination of five other workers with the same occupation. The results of these examinations indicate that intoxication with pyroxylin lacquer exerts its effect in the beginning chiefly on the blood coagulation and prothrombin time. A relatively moderate to severe monocytosis with relatively atypical forms also seems to be a comparatively early manifestation. Examination of the sternal punctate gives some valuable information.

Lancet, London

2:843-892 (Oct. 24) 1953

Children in Hospital: Preparation for Operation. R. Mac Keith.—p. 843.
*Radiography in Diagnosis of Hyaline Membrane. I. Donald and R. E. Steiner.—p. 846.
Radiology of Chronic Bronchitis. G. Simon and H. J. B. Galbraith. —p. 850.
Thorium Deposits in Liver Demonstrated During Life. M. C. Berenbaum and C. A. Birch.—p. 852.
Aseptic Necrosis of Bone in Caisson Disease. J. Ronald.—p. 855.
Use of Ethylene Diamine Tetraacetic Acid (Versene) for Removing Fission Products from Skeleton. J. M. Vaughan and M. L. Tutt. —p. 856.
Malnutrition in the Elderly. H. Fuld and K. V. Robinson.—p. 860.
Incision for Acute Appendicitis. M. R. Ewing and A. K. Monro.—p. 864.

Radiography in Diagnosis of Hyaline Membrane.—It is now widely recognized that hyaline membrane in the lungs of newborn infants has some connection with atelectasis, which is the most important single cause of death in premature infants. The diagnosis of hyaline membrane is difficult. At best a guess may be made that hyaline membrane may be present if, within the first few hours of life, a baby exhibits increasing dyspnea, grunting respirations, inspiratory recession (either subcostal, intercostal, sternal, or suprasternal), the use of accessory muscles, cyanosis, poor air entry, and bouts of apnea. The diagnosis is still more likely if the baby is premature or has been delivered by cesarean section because of maternal diabetes; but a similar clinical picture can be evoked by other conditions, such as intraventricular and subdural hemorrhage, primary atelectasis, pneumonia, esophagotracheal fistula, diaphragmatic hernia, and pulmonary hypoplasia. To learn how far hyaline membrane is reversible demands diagnosis before death. Donald and Steiner utilized radiography. Three different stages in the evolution of hyaline membrane were identified radiologically and correlated with the clinical and necropsy findings: (1) First a fine military mottling throughout the lung fields appears. (2) This is followed in the progressive lesion by a coarser and more coalescent type of opacity. At this stage the bronchial tree is often clearly demarcated. (3) Finally the shadows become confluent as a result of lobar or lobular consolidation and collapse. The baby may die of some other lesion—associated intraventricular hemorrhage—before all three stages are radiologically demonstrable, and unless radiographs are taken every few hours, all the different stages may not be observed. The authors review the histories of 28 newborn infants with respiratory distress and who exhibited interesting radiological changes. Many other cases were investigated, but since they do not concern the subject of this paper, they are omitted. Five groups of cases are differentiated. The 11 cases of group 1 showed significant radiological signs, and hyaline membrane was found at necropsy. The eight cases of group 2 showed clinical signs of atelectasis, but no radiological signs, and hyaline membrane was not found at necropsy. The authors class as group 3 infants without radiological signs, but in whom hyaline membrane is found at autopsy. No such cases were observed. Group 4 comprised four infants with radiological and clinical signs, but since these children recovered, the diagnosis remains unproved. In the five cases of group 5, radiological signs were present, but, since lesions other than hyaline membrane were found at necropsy, this last group is considered as false positives.

Medical Journal of Australia, Sydney

2:481-516 (Sept. 26) 1953. Partial Index

Hansen's Disease in New Guinea. J. G. Sloman.—p. 487.
*Gall-Stones in 7,000 Post-Mortem Examinations. J. B. Cleland.—p. 488.
Recurrent Rectal Prolapse: Operative Method of Treatment. K. W. Starr.—p. 490.
*Functional Adrenal Cortical Carcinoma Complicated by Perforated Gastric Ulcer: Report of Case with Post-Mortem Findings. C. H. Campbell.—p. 494.

Gallstones in 7,000 Postmortem Examinations.—Cleland found gallstones in 871 of 7,000 postmortem examinations, that is, in 434 men and 437 women. Since the number examined included about twice as many men as women (4,592 men and 2,401 women), gallstones are more than twice as frequent in women as in men. Gallstones begin to be common in men in the 50's (1 in 11) and in women in the 30's (1 in 9). One at least in six men over 70 years and one in each three women aged over 70 years will have gallstones. The pigment type seems the commonest in men and the facetted in women. There does not seem to be any association between gallstones and malignant disease or between gallstones and cardiac infarction or fibrosis.

Adrenal Cortical Carcinoma and Perforated Gastric Ulcer.—Campbell points out that peptic ulceration is one of the complications that may arise during treatment with some of the adrenal glucocorticoid hormones or corticotropin. He reports the history of a woman, aged 72, who had an adrenal cortical carcinoma producing some of the features of Cushing's syndrome and who died from a perforated peptic ulcer. The postmortem examination of this woman revealed acute peritonitis, a sequel to the perforation of an acute gastric ulcer; a primary adrenal cortical carcinoma with metastases in the peritoneum, omentum, liver, lungs and thyroid; hypertensive congestive cardiac failure; adenomyosis; and chronic cystic cervicitis. In this case, the plethora, the rounding of the facies, the hirsutism, the obesity, the diabetes, the urinary 17-ketosteroid excretion, which was slightly elevated for a woman of her age, and possibly the edema, all may be taken as evidence of hormone production by the adrenal tumor. The gastric ulcer was relatively acute and apparently developed during the terminal illness. There was evidence suggesting that there was a relationship between the gastric ulcer and the adrenal carcinoma.

Presse Medicale, Paris

61:1347-1378 (Oct. 21) 1953

*Mammography as a Clinical Aid. Vergoz, Tillier and Laquière.—p. 1347.
Particular Clinical Aspect of Congenital Neuroblastoma: Syndrome of Massive Metastatic Dissemination in Cellular Tissue. M. Kaplan, R. Grumbach and P. Vesin.—p. 1350.
Myopathy and Sequelae of Poliomyelitis: Importance of Radiograms of Muscles. A. Grossiord, J. Bernard and R. Marteaud.—p. 1353.
Radiodiagnosis of Occlusions of Small Intestine by Fraena and Adherences. C. Oliver, N. Arvay and J. Ferrari.—p. 1355.
Melanous Tumor of Ileum with Anemic Form: Metastasis of Malignant Melanoma of Gum. C. Debray, M. Roux, J. Puyaubert, R. Marie and R. Vilain.—p. 1358.
Most Frequent Localization of Segmental Arteritis: At Superficial Femoral. J. Oudot and J. M. Cormier.—p. 1361.

Mammography.—Eight cases of various mammary lesions are reported. In every one, mammographic evidence coincided with the clinical impression of the lesion and with biopsy findings. In one case, the mammogram was the only thing able to cure the patient of her cancerophobia. The authors do not suggest that mammography replace breast biopsy, but they feel that its accuracy warrants its use as an intermediate step between clinical examination and biopsy. It would be especially useful in carcinoma of the breast having only axillary clinical signs and in the differential diagnosis of benign and malignant tumors, the radiographic symptomatology of which has been established with great precision by Gros and his colleagues. Mammography is also of value in determining the true sizes of tumors of the breast, since it shows the tumor alone while palpation confuses the fat around the tumor with the tumor itself.

Revista de Investigación Clínica, México, D. F.

5:257-358 (July-Sept.) 1953. Partial Index

Metabolic Studies on Surgical Patients. M. Quijano, N. J. Laguna and I. Escobar.—p. 257.
*Vascular Complications in Patients with Diabetes: I. Changes in Lower Limbs. R. Correa Suárez and R. Rodríguez.—p. 273.
Addison's Disease: Commentary on Case. J. A. García Reyes.—p. 327.
Jaundice After Blood Transfusion. L. Sánchez Medal and J. L. Bravo. —p. 337.

Vascular Complications of Lower Extremities in Diabetes.—A review of the clinical records of 1,066 patients with diabetes mellitus who were observed for a period of six years in the Hospital de Enfermedades de la Nutrición of Mexico City showed vascular complications of the lower extremities in 136 cases. They were purely vascular in 94 patients, vascular and infectious in 28, vascular and nervous in 8, vascular, infectious, and nervous in 4, and purely infectious or purely nervous in 1 case each. In the pure vascular form, the circulatory insufficiency was moderate in 66 cases and acute in 15. Gangrene developed in 13 cases. In the vascular and infectious form, the circulatory lesion and infection were observed in 17 cases and gangrene in 11 cases. The other forms were represented by small groups, a fact that prevented studies in detail. The incidence of vascular complications of the lower extremities was the same for women as for men. The incidence increases with age, obesity, and the duration of diabetes. The greatest incidence is in patients between the ages of 60 and 70 with duration of diabetes for a period of from 5 to 10 years. The severity of diabetes does not play any role in the development of vascular complications of the lower extremities. They are most frequent in patients requiring less than 10 units of insulin and a diet of from 150 to 200 gm. of carbohydrates. In a small group of patients, vascular complications were observed in the first five years in the course of diabetes, probably because they had either inadequate treatment or no treatment at all.

Schweizerische medizinische Wochenschrift, Basel

83:999-1022 (Oct. 17) 1953. Partial Index

*Diagnosis and Significance of Lymph Nodes Perforating into Bronchial System. E. J. Fischer.—p. 999.
The Bacteriologist Cannot Determine Part Played by Bovine Bacillus in Human Tuberculosis. E. Urech and J. Hofstetter.—p. 1003.
Physiological Bases of Polyvalent Treatment of Anemia. H. Dubois-Ferrière.—p. 1004.

Tuberculous Lymph Nodes Perforating into Bronchi.—Of 28 patients between the ages of 15 and 26 years with active pulmonary tuberculosis, 12 had changes in the proximal portions of the segmental bronchi that were demonstrated on tomographic examination. A cavity filled with contrast medium was observed immediately adjacent to the proximal segments of the bronchial system. The larger part of the contrast medium depot was observed at the place of division of a segmental branch in its subsegments, i. e., at a place in which still relatively large intrapulmonary lymph nodes may be found. In several cases, the diameter of the contrast medium depot was considerably greater than the caliber of the segmental branch whose supply area was densified by infiltration. The parabronchial pouches demonstrated in the presence of sector-shaped infiltrations of the same segment were interpreted by the author as so-called lymph node cavities. An isolated lymph node cavity in a 21-year-old patient was demonstrated in the absence of infiltration. It seems that perforation of the bronchial wall occurs in areas of predilection, namely in those that are surrounded most closely by lymph nodes and frequently in patients with late primary infection. Perforating lymph nodes are characterized by discharge of caseous lymphatic tissue or pus from a lesion of the mucosa, anthracosis of ulcer margins and fistula-like openings. Tomographic demonstration by contrast medium is of considerable aid in differentiation of the relationship between lymph nodes and lesions of the bronchial mucosa. Tuberculosis of the mucosa of the bronchial segments adjacent to the hilus is never primary but is pathogenically linked to the specific lymphadenitis, the roentgen diagnosis of which is possible only in the pronounced cases. Because of the presence of lymphadenobronchogenic lesions, pulmonary tuberculosis may progress more frequently than it has been assumed hitherto, and tuberculous bronchial stenosis particularly in the segmental branches, which may be demonstrated only many years later, is no longer a rare observation. Rational treatment depends on early diagnosis of lymphadenobronchogenic lesions.

South African Medical Journal, Cape Town

27:869-892 (Oct. 3) 1953. **Partial Index**

*Radiological Diagnosis of Aortic Sinus Aneurysms. S. F. Oosthuizen. —p. 869.
Bronchogenic Carcinoma: Review Illustrated by 100 Cases. D. Adler and D. Fuller.—p. 874.
Tuberculosis in Non-European Psychotics. J. S. du T. de Wet.—p. 880.
Case of Fanconi's Anaemia. I. Kessel and H. Cohen.—p. 883.
Treatment of Hereditary Haemorrhagic Telangiectasia with Oestrogenic Hormone. B. G. Shapiro.—p. 885.

Aortic Sinus Aneurysm.—A diagnosis of aortic sinus aneurysm was made in two men who were admitted to the hospital in congestive cardiac failure. The diagnosis was based on the distinctive roentgenographic appearances of the heart that were similar in the two patients. There was bulging of the upper right cardiac border and enlargement of the left ventricle, and the contour of the heart appeared "sickle-shaped." Both patients did not respond to treatment and died suddenly. Necropsy of the heart of both patients revealed the presence of an aortic aneurysm involving the ascending aorta and the aortic sinuses. Cystic necrosis of the media was the causative factor in one and syphilis in the other.

Tidsskrift for Den Norske Laegeforening, Oslo

73:693-726 (Sept. 15) 1953. **Partial Index**

Dihydroxypropyl Theophylline and Theophylline Ethylendiamine. S. C. Sommerfelt.—p. 693.
*Treatment of Celiac Disease with Diet Free from Wheat, Rye and Oats. K. Grette and O. Imerslund.—p. 695.
Case of Chronic Invagination Reduced by Barium Enema. I. C. Andresen. —p. 697.

Treatment of Celiac Disease with Diet Free from Wheat, Rye, and Oats.—Clinical-experimental studies by a group of Dutch investigators disclosed the harmful effect of wheat, rye, and oats in celiac disease. Since December, 1952, diet from which these substances were excluded has been applied for from 4 to 16 weeks in the Children's Clinic of the Rigshospital in the treatment of 12 cases of verified celiac disease. Grette and Imerslund confirm the good results reported by others with the treatment. All the patients showed excellent clinical, roentgenologic, and biochemical response. The diet departs but little from the ordinary diet, is inexpensive, and can be made varied and pleasing to the taste. Its introduction is regarded as a distinct advance in the treatment of celiac disease.

Zeitschrift für Urologie, Leipzig

46:497-560 (No. 8) 1953. **Partial Index**

Importance of Urography in Estimating Malignancy of Bladder Tumors. S. Petković.—p. 511.
*Disturbances of Bladder Function During Poliomyelitis. F. J. Götzen. —p. 523.
Ectopic Orifices of Ureter. P. Deuticke.—p. 533.
*Fatality During Urethrography with Barium Sulfate. H. Ball and H. Pelz. —p. 539.

Disturbances of Bladder Function in Poliomyelitis.—Götzen shows that poliomyelitis may cause various bladder disturbances, such as pollakiuria, retention of urine, and urinary incontinence. These disturbances whether of meningitic, medullary, or diencephalic origin usually take a favorable course and generally subside in a relatively short time. The author shows that the literature contains contradictory theories about the mechanisms involved in the vesical disturbances that occur during poliomyelitis and explains his own concept. He rejects Fanconi's theory that inadequate innervation of the abdominal muscular pressure apparatus plays a part in the bladder disturbances that accompany poliomyelitis, because resumption of micturition has been known to occur after urinary retention without improvement in abdominal muscular pressure. Reviewing the innervation of the bladder he says that the neuromotor connection between cortex and bladder consists of a central and peripheral neuron. The physiological law of nerve injuries maintains that injury of the central neuron results in spastic paralysis, whereas that of the peripheral neuron causes flaccid paralysis; and it does not matter whether the lesion involves the anterior horns, the anterior roots, or the peripheral motor nerves. He feels that temporary urinary retention during poliomyelitis might be explained by slight, possibly edematous, changes in the vesical center in the lumbar region (sympathetic center) or in the central neuron, which regressed again. In extremely rare cases of poliomyelitis urinary retention or incontinence may persist. He cites a case of this type, in which urinary incontinence that developed during an attack of poliomyelitis at the age of 4 persisted for four years. Examination at the age of 8 years corroborated the presence of an organic irreversible paralysis of the vesical sphincter, presumably of medullary origin. He feels that perhaps denervation of the bladder, by excluding the pathological innervation, might be of therapeutic value in this case. Urographic examination of this boy disclosed bilateral atony of the ureters.

Fatality During Urethrography with Barium Sulfate.—The case presented by Ball and Pelz is that of a man, aged 56, with hypertrophy of the prostate, who had been referred by his physician to the surgical department with a recommendation that a prostatectomy be done. Cystoscopy disclosed a severe cystitis. Urethrography with retrograde instillation of contrast medium on July 12 was tolerated without difficulties, but, because the posterior part of the prostate had moved during the roentgenologic examination, the urethrography was repeated five days later. In the course of this second urethrography, the patient suddenly experienced dyspnea that was followed by respiratory arrest. Various methods of resuscitation were without avail. The contrast medium, a suspension of barium sulfate, had entered the venous system and produced a diffuse capillary pulmonary embolism, and crystals of barium sulfate spread through the entire body, as was demonstrated by the histological examination of nearly all parenchymatous organs. It is not entirely clear how the barium sulfate entered the systemic circulation. Passage through the pulmonary capillaries during the temporary restoration of respiration is a possibility; another one is a paradoxical embolism by pressure increase in the right side of the heart during the injection of epinephrine. The authors regard the first possibility as more probable and believe that death was due to the diffuse capillary pulmonary embolism. Since the literature contains other reports of urethrovenous passage of contrast medium, some with fatal outcome, the authors warn against the use of contrast mediums that contain barium sulfate and, in agreement with others, reject the use of iodized oils. They stress that urethrography should be done exclusively with intravenously injectable contrast media.

BOOK REVIEWS

Manual of Medical Emergencies. By Stuart C. Cullen, M.D., Professor of Surgery, State University of Iowa College of Medicine, Iowa City, and E. G. Gross, M.D., Professor and Head of Department of Pharmacology, State University of Iowa College of Medicine. Second edition. Cloth. $4.50. Pp. 278, with 34 illustrations. Year Book Publishers, Inc., 200 E. Illinois Street, Chicago 11, 1953.

This pocket manual follows the same plan as used in the first edition, namely, to outline "the steps to be taken early in the diagnosis and therapy of emergency medical problems." Although the book is intensely practical, the authors managed to impart a great deal of basic, fundamental information about the treatment of emergency situations described in the text. In other words, this is not just a first aid manual prescribing procedures without giving the reasons for them. The common emergencies that a general practitioner may be required to treat are adequately discussed. These include artificial respiration and the use of an airway, circulatory emergencies, acute poisoning, head injuries, allergic reactions, and comatose states. The book is enlivened by several amusing cartoons showing the right and wrong ways to apply certain emergency treatments. Resident physicians in general hospitals as well as practicing physicians should have this manual for ready reference.

Enzymatic Concept of Anaphylaxis and Allergy and the Role of Eosinophils in Anaphylactic Reactions Related to Hormonal Alterations. By Z. Z. Godlowski, M.D., Ph.D., M.R.C.P., Physician to Ballochmyle Hospital, Ayrshire. Foreword by A. Murray Drennan, M.D., F.R.C.P.E., F.R.S.E., Professor of Pathology, University of Edinburgh, Edinburgh. Cloth: $3.50. Pp. 120, with 17 illustrations. [Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2]; E. & S. Livingstone, 16 and 17 Teviot Place, Edinburgh 1, 1953.

The book is divided into three sections, dealing respectively with the author's enzymatic concept of anaphylaxis and allergy, with the role of hormones in anaphylaxis, and with the place of the eosinophil in hypersensitivity and hormonal influence. The author believes that the anaphylactic or allergic reaction is produced as follows: The antigen produces a toxic proteolysis; the proteoses thus liberated activate nonspecific proteinases; a chaotic proteolysis of the organism's own proteins is thus started and the resultant toxins formed produce the local and constitutional manifestations of anaphylaxis and allergy. He regards the eosinophils as carriers of antigens and believes these cells are formed in the intestinal mucosa and in other tissues in addition to the bone marrow. The author supports these and other contentions with experimental data of his own and those of other workers. This little book will be interesting reading for the student of anaphylaxis and allergy, even though he will probably not agree with the author's conclusions. It can be recommended to the immunologists, physiologists, and clinicians who have an interest in the problems of hypersensitivity.

A Text-Book of Pathology: An Introduction to Medicine. By William Boyd, M.D., M.D.C.P., F.R.C.P., Professor of Pathology, University of British Columbia, Vancouver. Sixth edition. Cloth. $12.50. Pp. 1024, with 602 illustrations. Lea & Febiger, 600 S. Washington Square, Philadelphia 6, 1953.

Now in its sixth American edition, not to speak of two Portuguese editions and a Spanish edition, this textbook on general and special pathology is so well known its author needs no introduction. As outlined by Dr. Boyd in his preface to the first edition, the book is intended for the student of pathology, graduate or undergraduate, and not the practitioner of pathology. In its present form it fulfills this intent well. While it is not as complete in either general or special pathology as some contemporary books, it is written in such a way that the student will not be confused by an excessive amount of information. Writing in his stimulating, clear style, Dr. Boyd has woven a pattern of the interrelationship of pathology, anatomy, physiology, and biochemistry that cannot fail to impress even the most critical student. The format and type are adequate and clear. A few illustrations need revision and the replacement of the color drawings with color photographs would be an improvement, but these are minor faults. The outlined bibliography at the end of each chapter is an ever-present temptation for the student to read further on the subject. Controversial subjects are handled with foresight, tact, and accuracy, leaving the student with a balanced outlook on them. Much new material has been added in this edition. The chapter on skin lesions is an example and rectifies a serious defect in previous editions.

Atlas typischer Röntgenbilder vom normalen Menschen. Von Professor Dr. Rudolf Grashey. Mit einer Entwicklungsdarstellung des wachsenden Skelettsystems und unter Berücksichtigung der Physik und Technik der Röntgendiagnostik, der Aufnahme- und Projektionsmethodik sowie der Fehlerquellen und Varietäten. Eighth edition edited by Privatdozent Dr. Rudolf Birkner. Cloth. 65.40 marks. Pp. 620, with 875 illustrations. Urban & Schwarzenberg, Thierschstrasse 11, München 22; Meinekestrasse 13, Berlin W. 15, 1953.

The first portion of this volume, rather than being an atlas, is a description of the production and physical characteristics of roentgenograms, as well as a presentation of the principles of good diagnostic technique. In addition, there is an interesting description of the diagnostic x-ray equipment now available in Germany. Although this section, comprising the first 90 pages, is interesting, it does not add greatly to the value of the book as an atlas of roentgenologic anatomy. The 315 unreduced reproductions of roentgenograms are of the highest quality. These are, with a few exceptions, reverse tone reproductions. Although many roentgenologists may object to this, comparison of these with the few facsimile tone reproductions in the volume indicates that their quality and fine detail are very much better than that which could be reproduced in ordinary negative reproductions. Accompanying the reproductions of roentgenograms are line drawings showing the positioning of the patient. All significant anatomic detail is listed in tables and outlined by figures on the roentgenogram. Normal variants, normal tomograms, and arthrograms are discussed and illustrated.

The final section of the book is devoted to the growth and development of the skeleton. Even though the major emphasis in this manual is on the normal skeleton, it would seem that a more logical sequence of development could be achieved if the section on the growing skeleton could be included under the main section of the atlas. This excellent book is unsurpassed by any available work. Although the first section is of relatively little interest, the atlas itself is so beautifully done and so high in quality that a knowledge of German is not necessary to make the remaining sections an extremely valuable reference work.

The 1952 Year Book of Endocrinology (January, 1952-January, 1953). Edited by Gilbert S. Gordan, M.D., Ph.D., Assistant Professor of Medicine, University of California School of Medicine, San Francisco. Cloth. $5.50. Pp. 400, with 107 illustrations. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1953.

The Year Book of Endocrinology is of great value to all physicians who are interested in this subject. There is no other single source where a physician may obtain such a summary of the current world literature. The editor has fulfilled his responsibility to his readers splendidly. He has been careful in his selection, and the summaries are excellent. Pertinent illustrations and charts are reprinted. The readers receive not only reviews of the literature but also opinions of the editor regarding many of these articles. Even though men who specialize in the fields of metabolism and endocrinology might disagree with many of these opinions, by and large they would have to agree that the editor has done an outstanding job. This book can be highly recommended.

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

Surgical Technique and Principles of Operative Surgery. By A. V. Partipilo, M.D., F.A.C.S., Associate Clinical Professor of Surgery, Stritch School of Medicine of Loyola University, Chicago. Foreword by Alton Ochsner, M.D., F.A.C.S., William Henderson Professor and Director of Department of Surgery, Tulane University School of Medicine, New Orleans. Fifth edition. Cloth. $15. Pp. 704, with 998 illustrations by W. C. Shepard and Hooker Goodwin. Lea & Febiger, 600 S. Washington Square, Philadelphia 6, 1953.

This fifth edition of Dr. Partipilo's monograph is well illustrated. Ten authors have contributed to the writing or rewriting of individual chapters. Each chapter reviews surgical anatomy and discusses pertinent pathological, physiological, and clinical aspects of its subject. The main emphasis is on surgical technique with many illustrations of tying knots, incisions, and techniques of suturing. The book is not designed as a text for medical students or as an advanced treatise on surgery. It does afford a reference source for details and illustrations of standard operations. It should be helpful as a general reference for junior surgeons or residents.

Medizinische Poliklinik: Vorlesungen über innere Medizin. Von Dr. Erwin Schliephake, Professor in Giessen. Second edition. Cloth. 32 marks. Pp. 704, with 202 illustrations. Gustav Fisher, Villengang 2, Jena 15b, Germany, 1953.

In the preface to this revised edition, appearing only seven months after the first, the author explains that the work is not a substitute for the usual textbook on internal medicine nor is it a systematic discussion of this subject. It is based largely on observations made in office practice and stresses the importance to the internist of the mutual relations brought about through the endocrine, circulatory, and nervous systems. The author gives special consideration to the influence of constitution and environment on disease and emphasizes the importance of the common diseases as contrasted with "interesting cases." Indeed, as he points out, we know less about such familiar diseases as the common cold, rheumatism, and peptic ulcers than we do about many rare ones. He also stresses the use of simple methods of examination, and he states that most laboratory tests are corroborative rather than primarily diagnostic. He admits that his earlier experiences in pathology and physiology occasionally lead him to stress consideration of pathological physiology. From the therapeutic standpoint he stresses the commoner inexpensive and well-known remedies and the use of physical therapy. The book opens with chapters on history-taking, in which the psychic as well as the physical is stressed. It then describes the vegetative system; metabolism and the internal secretions; allergy; the effects of cold; the rheumatic diseases; degeneration and wear and tear; the infections; diseases of the respiratory system, the hematopoietic system, the digestive organs, the peritoneum, and the spleen; the circulatory organs, the urinary system, and the nervous system; and infestations with the larger parasitic worms. Sections on treatment are occasionally interpolated. Although certain diseases, such as trichinosis, are not discussed, this is to be expected from the nature of the work. Some of the newest clinical entities such as cat-scratch disease are described. The work contains many useful hints and should be of interest particularly to the general practitioner and the internist. The book is written in colloquial rather than formal style. The illustrations are excellent, especially the color plates of the blood. There is a subject index but no formal bibliographies. The book is attractively bound, and the paper and typography are excellent.

Textbook of Genetics. By William Hovanitz, Professor of Cytology and Genetics, University of San Francisco, San Francisco, California. Cloth. $5.95. Pp. 420, with 268 illustrations. Elsevier Press, Inc., 402 Lovett Blvd., Houston 6; 155 E. 82nd St., New York 28; 118 Spuistraat, Amsterdam C, Netherlands, 1953.

This book is designed as an elementary text in genetics for college students. Genetic variations in both plants and animals are described, and the mechanisms of heredity that control them are discussed. Emphasis is placed on breeding and cytological studies in lower organisms. For this reason, the book will be of limited interest to the physician, who is primarily interested in the established facts of human heredity.

Managing Your Coronary. By Dr. William A. Brams. Cloth. $2.95. Pp. 158, with illustrations by Hertha Furth. J. B. Lippincott Company, 227-231 S. Sixth St., Philadelphia 5, 1953.

From his experiences with cardiac patients as a heart specialist for many years, Dr. Brams has written this excellent book for the patient himself. He was fortunate in obtaining competent lay help in making the book easy to read. Good illustrations, some amusing as well as instructive, supplement the well-written text. The general tone of the book is one of cautious optimism. The patient learns that he must live within the capabilities of his damaged heart. He learns that, if he follows certain general principles of conserving his cardiac reserve and avoiding strain, he can look forward with reasonable assurance to years of comfortable living. The mental as well as the physical aspects of adjustment are considered in detail in a clear and easily understood manner. The difficult job of explaining in nonmedical terms the anatomy and physiology of the heart and the damage wrought by an attack of coronary artery thrombosis is handled expertly and in simple terms. A chapter entitled "How Science Is Helping You" describes current research trends and gives the patient hope that, as medical knowledge increases, more can be done for his condition. This book may be recommended by the physician to any patient who has had a coronary artery thrombosis.

Frazer's Manual of Embryology: The Development of the Human Body. By J. S. Baxter, M.A., M.Sc., M.D., Professor of Anatomy, University College, Cardiff. Third edition. Cloth. $8. Pp. 488, with 288 illustrations. [Williams & Wilkins Company, Mount Royal and Guilford Aves, Baltimore 2]; Baillière, Tindall & Cox, 7-8 Henrietta St., Covent Garden, London, W.C.2, 1953.

The scope of the new edition of this well-known book has not significantly changed from the original, namely, to present the development of the body by discussing, where possible, the development of entire regions in preference to separate descriptions of the development of individual organs; in many ways this is similar to an approach often used in human anatomy. The new editor emphasizes that he attempts to preserve the original character of the book, much of which was based on the subjective outlook of one man. This attempt is also emphasized by the lack of bibliography and by the unusually restricted references to comparative physiology. Only the first part dealing with early and general development has been extensively rewritten, and newly obtained information has been well interwoven. Detail is omitted, increasing the readability of the book, which is written in a pleasant and lucid style. It is well illustrated, mainly by drawings and only sparingly by photomicrographs. As a manual of embryology, it can be highly recommended to both students and physicians who want to acquaint themselves with some aspects of human development.

Compression Arthrodesis, Including Central Dislocation as a Principle in Hip Surgery. By John Charnley, F.R.C.S., Consultant Orthopaedic Surgeon to Manchester Royal Infirmary, Manchester, England. With chapter on mechanics by Professor J. A. L. Matheson, Beyer Professor of Engineering, University of Manchester, and histological observations by Professor S. L. Baker. Cloth. $8.50. Pp. 264, with 209 illustrations. [Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2]; E. & S. Livingstone, 16 and 17 Teviot Place, Edinburgh 1, 1953.

This unique volume by a prominent English orthopedist advances the role of compression forces on bone surfaces in fusion operations of various joints. Extensive experimental and clinical experiences accompanied by line drawings and roentgenograms illustrate the early union of bone surfaces resulting from compression and fixation. The operative technique of compression arthrodesis of all the major as well as lesser joints and the basic mechanical principles involved are given. Many excellent photomicrographs supplement the clinical applications of the compression method of fusion. A good description of the author's hip fusion operation, combining the advantages of compression of bone surfaces with central dislocation of the head and neck of the femur, is included. The text is most readable and the general format, type, and illustrations are clear and pleasing. Charnley's book should be read by all orthopedists and all surgeons who treat diseases of the joints.

QUERIES AND MINOR NOTES

BOOSTER DOSES OF TETANUS TOXOID

To the Editor:—*How long after a basic active immunization was established, without booster injections in the interim, would a booster injection of tetanus toxoid produce a therapeutic level? For example, after what period of time following a basic active immunization would it be necessary to give prophylactic tetanus antitoxin for an injury instead of a booster injection of tetanus toxoid?*

Seymour S. Rogers, M.D., Greensboro, N. C.

Answer.—Available evidence indicates that a person can respond to a booster dose of tetanus toxoid for as long as 10 years after the basic immunization. It is probable that this capacity to respond may last a lifetime. Presuming that proper techniques of basic immunization have been followed, the booster dose need not be large. A satisfactory dose is 0.1 cc. of tetanus toxoid, either fluid or alum-depot type (preferably the former), given either subcutaneously or intracutaneously. However, there are definite indications for the complemental use of antitoxin in a minimal dose of 10,000 American units and under the following circumstances: (1) delay of more than one day in administration of the booster dose of tetanus toxoid; (2) equivocal history of previous immunization with tetanus toxoid; (3) severe local lesions considered likely to provoke clinical tetanus (lacerations, gunshot wounds, etc.); and (4) marked general debility (anemia from acute or chronic blood loss, prolonged or acute debilitating illness, poor general health). Under all circumstances, all precautions should be taken to predict and prevent or modify serum sickness of all possible types when antitoxin serum is employed. It is to be stressed that antitoxin should be used when there is any doubt in the mind of the physician concerning the history of toxoid administration. Two cases are known to the consultant to whom this query was referred wherein fatal tetanus occurred because unwarranted reliance was placed on an erroneous history of previous toxoid injections. One of the cases was that of a child with a compound fracture, and the other that of a child who stepped on a nail. Had the indications for the combined use of toxoid and antitoxin been known, these unfortunate events would not have occurred.

SPASTIC UTERUS

To the Editor:—*We talk about spastic stomachs, spastic bowels, spastic arteries, and so why not a spastic uterus? I have seen women who had no intrauterine growths, normal hormone levels, and normal metabolic rates and who took hormones, thyroid, vitamins, minerals, and sedatives but could not carry a pregnancy past the sixth month. Throughout their pregancies, the uterus feels tense and they complain of frequent uterine contractures but no bleeding. Then at five or six months, the cramps become severer and they have to all practical purposes abruptio placentae. I have never read of this syndrome, but it seems to be a definite clinical entity and could be called the spastic uterine syndrome of pregnancy. Please discuss this condition and give suggestions as to treatment. Phenobarbital is not enough.*

Arthur A. Smith, M.D., Morganfield, Ky.

Answer.—The syndrome described is sufficiently common to warrant more study. The termination of a pregnancy at the previable period occurs in the absence of demonstrable pathology. The uterine spasticity is probably the result of changes within the uterine cavity. Premature uterine contractions may be induced by some placental separation that eventuates in the delivery of a dead or living fetus. The most logical assumption is that this condition is brought about by abnormal hormonal support of the pregnancy. That this is not reflected in hormonal studies that have been made is not important. Until the cause is known, the treatment must be empiric. The patient should have a complete medical study including kidney function studies. Occasionally a latent chronic vascular hypertensive disease is the cause of late abortions. During the pregnancy unusual stimuli such as coitus, douches, and catharsis should be avoided. Treatment with large amounts of parenterally administered progesterone, 100 mg. daily, until viability is logical and has provided the best results.

RECURRENT MENINGOCOCCEMIA

To the Editor:—*What is the origin of a focus producing meningococcemia that has recurred in a 56-year-old white man on two occasions following the original infection two years ago? Each episode has responded to penicillin and sulfonamide therapy, and each episode has been confirmed by a positive blood culture prior to therapy. Physical examination has revealed no abnormality. Roentgen ray studies of teeth, sinuses, and mastoids showed no significant findings. I would appreciate advice.*

F. E. Kirshman, M.D., Muncie, Ind.

Answer.—The question does not specify whether the patient had meningococcemia without evidence of meningitis or whether intrathecal therapy was administered. If intraspinal treatment was resorted to, there is a possible explanation for the recurrent attacks although the intervals are unusually long. When antiserums were used intraspinally for meningitis, recurrences were not extremely rare. It was believed that in the processes of healing adhesions formed in the spinal canal that walled off pockets containing meningococci. Later after an apparent recovery, when the patient resumed his customary activities, the meningococci presumably broke loose from their captivity and reinfection took place. If there was no intrathecal therapy, the focus of reinfection would probably be in the nasopharyngeal area. One of the sinuses should be suspected, notwithstanding lack of findings on the roentgen ray studies that have been made. But as a rule the carrier state for meningococci does not persist for long periods either with or without treatment.

POISONOUS PLANTS IN CALIFORNIA

To the Editor:—*A question frequently asked by mothers is "what common shrubs and plants produce poisonous berries?" In California a few shrubs produce bright-colored berries that are often picked and eaten by small children. Please supply a list or description of these poisonous plants.*

Paul Russell, M.D., Inglewood, Calif.

Answer.—The most dangerous plant as a child-poisoner in California is the castor bean, which contains the toxin ricin, and death has resulted from the eating of two seeds. The Chinaberry tree is also an offender. The pulp of the smooth, yellow fruit contains a narcotic and may produce alarming symptoms. Effects are seldom fatal. There are 16 species of nightshade in Southern California, and the berries are sometimes eaten by children. All nightshades are more or less poisonous; poisoning seldom ends fatally. Burning bush or wahoo is a small, shrubby tree grown as an ornamental. Shiny, red seeds are not particularly deadly but cause great prostration and nausea. English ivy, true holly, mistletoe, wistaria, buckeye, honeysuckle fruit, and wild cucumber seeds are all capable of producing alarming symptoms but are minor offenders compared with castor bean, which accounts for more fatalities among youngsters every summer than all the rest put together.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

AMENORRHEA FOLLOWING MISCARRIAGE

To the Editor:—*A woman, aged 28, had a healthy child five years ago. Two years ago she had a spontaneous miscarriage, and since then she has not menstruated. She had always been regular previously. Her weight has dropped from about 125 to 100 lb. (56.7 to 45.4 kg.). She is afraid to eat, because abdominal discomfort follows the ingestion of food. If she drinks liquids during meals, water, milk, tea, coffee, or even soup, she at once becomes bloated and feels about to burst. Often, on arising in the morning her entire body feels sore and tingling, and she cannot bear to be touched. She has consulted specialists and spent a week in Harper Hospital, Detroit, for exhaustive studies, which showed nothing abnormal. She still does not menstruate and still feels as uncomfortable as before. She has taken progesterone and estrogens. She has had roentgenographic examination of the pituitary, gastrointestinal tract, gallbladder, and chest (for possible tuberculosis), and she has had biopsy of the endometrium. Results of all these have been normal. The patient takes thyroid continually because of a low basal metabolism. Please discuss this case.*

Max Isenberg, M.D., New York.

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—The clinical data given on this patient lack certain essential details. There is no specific description of physical findings, particularly in the abdomen and pelvis. The interpretation of the endometrial biopsy is not detailed. The actual basal metabolic rate is not given. A more detailed analysis of the course of the illness and of the role of emotional factors would be helpful. It is assumed that the results of these examinations were normal, and, under these circumstances, the fear of eating, the bloating after meals, the soreness and tingling of the body, and the feeling of not wanting to be touched frequently noted on arising all suggest the likelihood of an emotional disturbance, for these symptoms are often manifestations of a basic psychiatric disorder, such as chronic depression or a chronic anxiety state. Pseudocyesis or a related hysterical phenomenon is suggested by the occurrence of the symptom of bloating after a miscarriage. Anorexia nervosa, with its variable and often bizarre psychiatric patterns, should be considered, although it is uncommon in parous females. Amenorrhea is fairly common in all of these functional disorders, but the possibility of organic endocrine disease should be considered. Primary ovarian failure would be characterized by hot flushes and an elevated level of urinary gonadotropins. A more likely possibility is the postpartum type of Simmonds' disease (hypopituitary cachexia). Patients with anterior pituitary insufficiency are usually somewhat older, but the postpartum type may occur in the third decade, usually following a difficult or complicated labor, although the specific precipitating factor is thought to be severe hemorrhage. The duration of this patient's pregnancy and further details of her spontaneous abortion would be of interest. Additional studies would be necessary to establish the diagnosis of anterior pituitary insufficiency. Eosinophilia, a low pituitary gonadotropin level, and an inadequate eosinopenic response to epinephrine, with or without response to corticotropin, would support this diagnosis. Although a precise diagnosis is not possible on the basis of the evidence offered, and, hence, detailed therapeutic recommendations cannot be made, this consultant would suggest that first consideration be given to a diagnosis of primary emotional or psychiatric disorder with secondary functional endocrine disturbance, rather than the reverse.

Answer.—If complete physical examination has ruled out organic disease and adequate endocrine treatment has produced no benefit, the chances are that this patient's trouble is basically psychogenic. Amenorrhea, digestive disturbances, and anorexia nervosa are familiar psychosomatic symptoms. A study of the patient from this angle will probably show that psychotherapy is indicated.

IMPOTENCE

To the Editor:—*What may be done for a man between 30 and 40 years of age as regards impotency?*

M.D., Michigan.

Answer.—Impotence in an apparently normal 30 to 40-year-old person usually has a psychological basis and requires therapy directed toward the basic psychic disturbances. This, of course, does not preclude the possibility that certain cases may be on a true organic basis and require careful study to determine the cause. Specific urologic and neurological causes should be sought and, if present, given appropriate therapy. Many constitutional diseases, such as hepatic disturbances, and others of a debilitating nature are associated with varying degrees of impotence. Generally the more obvious signs of the disease would be manifest, along with impotence, and these should help establish the cause. In such cases, appropriate treatment of the general disorder should also help sexual function. It should also be noted that lowered sexual function has been observed in association with the administration of certain drugs, such as methantheline (Banthine). It is rare for the average man in this age group to suffer impotence on the basis of male hormone deficiency. Laboratory tests for such deficiency are limited, from the standpoint of clinical application. Determination of 17-ketosteroid may be of limited value if the findings are markedly low (in the region, for example, of less than 5 mg. per 24 hour output of urine). The fact that adrenal steroids make up a large part of total 17-ketosteroids excretion minimizes the value of this determination. Recently, seminal fructose analyses have been suggested as a guide to androgenic activity, since the secretion of fructose by the seminal vesicles depends on adequate stimulation of these accessory sex glands by male hormone. The findings of extremely low fructose levels in the semen may help point to a true endocrine deficiency, particularly in the presence of other diagnostic data, such as low semen volume or low 17-ketosteroids.

In treating these patients it is preferable to attempt stimulation of androgenic secretion by using chorionic gonadotrophin in doses of 500 to 1,000 I. U., two or three times a week for a period of four to six weeks. It has recently been suggested that such lipotropic substances as betaine can improve testicular hormone function indirectly on an hepatic basis, but this is still speculative. If stimulation of androgenic function proves unsuccessful, substitution therapy with any of the potent androgens (for example, testosterone propionate, 50 mg. intramuscularly, two or three times a week) may be utilized. Eunuchs or eunuchoidal persons at times may require higher dosages, but frequently can be maintained on less.

It must be reiterated, however, that hormone medication in the vast majority of 30 to 40-year-old patients is not appropriate therapy, in view of the common psychological cause and the fact that the patient is usually manufacturing adequate androgen on his own. The use of testosterone in such cases may only help prolong the vicious cycle involving sexual inadequacy and fear of sexual inadequacy in which the patient already finds himself.

ENUCLEATION OF THE EYE

To the Editor:—*In performing an enucleation is it advisable to clamp the optic nerve with a hemostat prior to cutting it with the scissors?*

Harmon U. Sanders, M.D., Independence, Mo.

Answer.—Clamping the optic nerve with a hemostat prior to cutting it with the scissors helps greatly to reduce hemorrhage and is a procedure that has long been employed by ophthalmic surgeons. When the enucleation is being performed because of a suspected intraocular neoplasm, such clamping is contraindicated, however, for in this situation one should remove as much of the intraorbital portion of the optic nerve as possible.

FETAL ELECTROCARDIOGRAMS

To the Editor:—*Sometimes during the prenatal examination, especially in the last trimester, the physician will hear an irregular fetal heart rate or one that beats regularly, skips a beat every 4 to 10 beats, and then beats regularly again. This occurs when there is no external bleeding, the patient is not in labor, and the uterus is perfectly soft and may continue for a month or so. While usually these infants have normal heart rates after delivery, I have heard of a few cases of heart block and have seen one case. Is there any way of telling which irregularity is significant and which is not? Is there any type of irregular rate under the above conditions that would call for termination of the pregnancy? Is intrauterine fetal anoxia an etiological factor, and what type of irregularity would be the deciding factor?*

M.D., Kentucky.

Answer.—Fetal electrocardiograms can be taken from the body surface of the mother. In that way the nature of the irregularity that is heard with a stethoscope can be accurately determined. Fetal electrocardiograms can be taken anytime after the sixth month of pregnancy, and they should be fairly easy to obtain in the last month of pregnancy when the fetal heartbeat can be easily heard. Premature contractions would certainly be less significant than heart block. Intrauterine fetal anoxia might be a factor in heart block, and in that case termination of the pregnancy might be feasible in order to save the life of the baby. In general, then, it would seem desirable to secure an electrocardiogram of the fetus by means of abdominal leads on the mother whenever irregularity is noted. The decision as to what is to be done can be made much more intelligently with this additional information.

BOOSTER DOSES OF TYPHOID VACCINE

To the Editor:—*Please advise if use of booster doses of typhoid vaccine are effective in cases in which the interval since the previous injection is five or more years? If they are not effective, what is considered the longest safe interval between recall doses? Is there any antibody production interference if typhoid and tetanus vaccine or typhoid and pertussis and diphtheria antigens are administered simultaneously?* *Clifton T. Morris, M.D., Baton Rouge, La.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—If five years have elapsed since the primary immunization, a recall dose of typhoid vaccine would not be likely to afford adequate protection. It is generally recommended that a booster dose be given every one or two years to insure immunity. The longest safe interval is now considered to be about two years. Although there may be no interference of antibody production in combining other antigens with typhoid vaccine, it would not be prudent to adopt such a procedure. Both local and constitutional reactions from typhoid vaccine alone are not infrequently severe.

Answer.—Longfellow and Luippold (*Am. J. Pub. Health* 30:1311-1317, 1940) showed that, in 51 subjects who had last received typhoid vaccine from 2 to 20 years (apparently averaging about 5 to 10 years) previously, 92% had a high antibody level two weeks after 0.5 ml. of typhoid vaccine was injected subcutaneously. Siler and associates (Immunization to Typhoid Fever, American Journal of Hygiene, Monographic Series, No. 17, Baltimore, Johns Hopkins Press, 1941, p. 132) report even better results following administration of 0.1 ml. of typhoid vaccine intracutaneously. Similar findings have been reported, with several other immunizing agents, for example, tetanus toxoid, by Looney, Edsall, and Chasen (*Fed. Proc.* 12:452, 1953). As a result of the investigations of Luippold, Siler, and their associates, the United States Army (and subsequently all three branches of the armed forces) authorized immunization with a single booster dose of typhoid vaccine for anyone who had ever had a complete, standard basic series of three doses. Thus it appears entirely safe to use a single booster dose regardless of the interval since the last injection if primary immunization was once carried through. However, all rules are made to be used with discretion, and, if a physician believes that his patient will be subjected to excessive risk of infection, a second booster dose (two to three weeks after the first) would be scientifically justified.

There is no confirmed evidence that typhoid, tetanus, pertussis, or diphtheria antigens interfere with each other when used in combination. Recent experimental studies suggest that this may occur under certain circumstances, but extensive field experience in man contradicts these findings. Excellent results have been obtained with the combinations mentioned in the inquiry above.

MARKING THE SKIN BEFORE SURGERY

To the Editor:—*What method or solution may be used to mark the skin over varicose veins, before surgery, that will not disappear with scrubbing?*

William D. Fitzgerald, M.D., Cleveland, Miss.

Answer.—A 2% aqueous solution of brilliant green painted on with an applicator and dried with a gauze sponge will withstand iodine, alcohol, or gentle scrubbing with Phisoderm (a sulfonated detergent). The only marking that will withstand prolonged scrubbing with soap and water is scarification of the skin with the back of the blade. A dye such as fuchsin-phenol, which is used in roentgen therapy to outline the field of irradiation, will stay on a long time, much to the annoyance of the patient.

PREMENSTRUAL CRAMPS WITH HYPOTENSION

To the Editor:—*A woman, aged 42, has periodic severe premenstrual cramps associated with pronounced fall in arterial blood pressure, from 130 systolic to 80 systolic, with diaphoresis and a slow pulse that is barely perceptible. At one time there was no radial pulse yet she was conscious. Ordinarily she does not perspire even with violent exercise. The electrocardiogram indicates normal function after attacks. The hemoglobin level is 12 gm. per 100 cc. and there are 3,910,000 red blood cells. The menstrual periods are regular, every 28 days, and of 5 days' duration. The attacks have been occurring most of her life. It is not considered feasible to give estrone (Theelin) before menstruation because of upsetting the menstrual cycle. The chest roentgenogram reveals no abnormalities. Can you help make a diagnosis or suggest preventive measures? No abnormalities were found on pelvic examination.* *M.D., Indiana.*

Answer.—The consultant knows of no rational explanation, at least on an endocrine basis, of such a syndrome in association with menstruation. The fact that the patient has had these attacks most of her life would indicate that they are not serious, and it would seem difficult to exclude a hysterical etiology. As the patient is now 42, one would probably prefer to continue with the symptomatic treatment that she has had for many years in the hope that the attacks will cease with the menopause, rather than to induce the latter with irradiation and thereby run the risk of adding severe vasomotor symptoms to the clinical picture.

PROPHYLAXIS OF OPHTHALMIA NEONATORUM

To the Editor:—*California has recently changed a law that permitted the use of only silver nitrate for ophthalmic prophylaxis in infants to allow the use of penicillin ointment. What are the dangers of sensitizing babies through the use of penicillin in the conjunctival sac?*

Elwyn H. Welch, M.D., Pomona, Calif.

Answer.—A great deal of thought has been given to the possibility that the use of penicillin in the prophylaxis of ophthalmia neonatorum might produce sensitivity to future administration of this antibiotic. It appears to be the opinion of the leading allergists of the country, who have been consulted about this problem, that the chances of sensitization on a widespread basis from the use of penicillin are remote. In obstetric clinics in which penicillin has been used for prophylactic purposes over a period of several years, no evidence has been obtained that this practice is dangerous.

HYPERTENSION DURING TRANSURETHRAL RESECTION

To the Editor:—*Doubtless you have received several communications concerning the question on hypertension during transurethral resection in* The Journal, *Aug. 15, 1953, page 1581. I am not aware that hypertension has occurred as a result of hemolysis. For several years we have studied the phenomenon of hemolysis in connection with transurethral prostatic resection and have never encountered any cases in which hypertension was attributed to this accident. In the answer published in* The Journal, *there was no mention of the occasional case of hypertension resulting from the use of ephedrine, which often is given in conjunction with spinal anesthesia for the performance of this operation. We have encountered this phenomenon, and in one instance alarming hypertension with associated pulmonary edema and nearly fatal outcome occurred.*

The statement in the published answer that hemolysis can usually be prevented by the use of an isotonic sodium chloride solution for distending the bladder during resection is correct only insofar as the avoidance of hemolysis is concerned (see correction in The Journal, *Aug. 29, 1953, page 1724). The sodium chloride would very effectively prevent the operation of high frequency current either for cutting or for coagulating of bleeding points. Most urologists who wish to avoid hemolysis have found the use of glucose solution, as recommended by Creevy, or the use of glycine solution, as recommended by Nesbit and Glickman, to be satisfactory. Neither of these solutions is an electrolyte, and neither interferes with the satisfactory use of high frequency currents.*

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POSTHERPETIC NEURALGIA

To the Editor:—*In Queries and Minor Notes* (The Journal, *Sept. 26, 1953, page 456) an inquiry regarding the proper treatment for chronic neuralgia that follows herpes zoster was answered with suggestions of posterior root section, chordotomy, sympathectomy, or removal or undercutting of the involved skin. Simple chemical interruption of the sympathetics and/or somatic nerves supplying the painful area with local anesthetic solutions by paravertebral nerve block will provide relief for some of these patients in a rather dramatic manner. This procedure is much simpler and more practical than the surgical procedures mentioned and deserves trial prior to consideration of the others.*

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VEIS-CLAUS OPERATION FOR DACRYOCYSTITIS

To the Editor:—*In* The Journal, *Nov. 7, 1953, page 991, the answer to a query on resistant, purulent dacryocystitis does not mention the Veis-Claus operation. This operation has been extensively employed in Europe with a high percentage of satisfactory results (Kirschner, M.; Lautenschlager, A., and Kleinschmidt, O.: Operative Surgery: The Ear, Air Passages and Neck, Philadelphia, J. B. Lippincott Company, 1937, pp. 98-100; Veis, J.:* Arch. f. Laryng. u. Rhin. **34:***84-86, 1921; Claus, H.:* Beitr. z. Anat., Physiol., Path. u. Therap. d. Ohres **26:***121-124 [Nov.] 1927). I described this operation in 1946* (Arch. Otolaryng. **43:***344-356 [April] 1946).*

In this country it has not been given the trial it deserves, judging from the literature. Its advantages are as follows: 1. It does not sacrifice normal tissues. 2. It is not complicated and is readily executed. 3. It is devoid of danger and is comparatively free from complications. 4. It is applicable to most, if not all, cases, irrespective of anatomic abnormalities. 5. It can be performed under direct vision. 6. It establishes wide communication between the lacrimal sac and the nasal cavity. 7. It does not damage the musculature of the lids. 8. It offers the best chances of success. 9. Last but not least, it does not necessitate an external incision.

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New York 28.

POLYCYSTIC RENAL DISEASE

To the Editor:—*In the Nov. 7, 1953,* Journal, *page 992, a query appears regarding polycystic disease in infancy. Observers have noted a bimodal curve with respect to the time of death of persons in whom a diagnosis of polycystic disease was made. Ferguson* (Proc. Roy. Soc. Med. *42:806-814 [Oct.] 1949) has written on this subject and has suggested that polycystic disease of the kidney in infants may represent a recessive genetic condition as contrasted to the well-known dominant genetic pattern of the disease in adults. He points out that cases of "infantile" and "adult" polycystic disease do not occur in the same family. The case referred to in the query, with two affected siblings, would be in line with the idea of recessive inheritance and, as such, the parents could expect any subsequent child to have a 1-in-4 chance of having the same abnormality.*

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The Dight Institute for Human Genetics
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HYPERTENSION

To the Editor:—*In the reply to the query in* The Journal, *Nov. 21, 1953, about hypertension in a 25-year-old woman known to have had hypertension since the age of 14 with persistent proteinuria but no detectable impairment of renal function, no mention is made of the diagnostic possibility of coarctation of the aorta nor that of orthostatic albuminuria. It is possible, but decidedly improbable, that hypertensive arterial disease of 10 years' duration occurring so early in life did not progress rapidly to irrevocable arteriosclerosis and renal or cardiac failure. Coarctation of the aorta may produce severe hypertension in the arms with little or no evidence of cardiac strain or impairment of the renal and/or cerebral circulation. Such hypertension in the upper extremities is not progressive. Anomalies of the renal vessels are not unusual and the coincidence of two vascular anomalies quite possible. Both coarctation of the aorta and orthostatic albuminuria should be ruled out before such a violently reacting medication as hydralazine is applied.*

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Washington 6, D. C.

REMOVAL OF PERMANGANATE STAINS

To the Editor:—*It is not necessary to use the strong and dangerous acids you advised in* The Journal, *Sept. 19, 1953, page 258. A 20% sodium bisulfite (or sodium metabisulfite) solution with a few drops hydrochloric acid will remove permanganate stains. Oxalic acid as advised in* The Journal, *Oct. 31, 1953, page 894, does not help for old stains.*

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PREVENTION AND TREATMENT OF CARDIAC ARREST

Julian Johnson, M.D.
and
Charles K. Kirby, M.D., Philadelphia

There is nothing more catastrophic from the standpoint of the family, the surgeon, the anesthetist, and all other persons involved than a sudden unexpected death in the operating room. This is especially true if the patient is a healthy person who is undergoing some relatively minor elective operative procedure. This catastrophe occurs so infrequently in each hospital that the experience of any one surgeon or anesthetist in dealing with the problem may be small. For this reason, it is perhaps worth while to stress again the important points in its prevention and treatment.

When the circulation of the blood to the brain stops, it must be started again within approximately four minutes if the patient is to survive. This time limit is of the greatest importance. Experience has shown that, in the presence of this emergency, virtually no surgeon or anesthetist is able to act quickly enough unless he has previously gone through the problem in his mind and planned the steps to be taken. It is important, therefore, for every anesthetist and every surgeon, in whatever specialty, to familiarize himself with the essential points concerning the diagnosis and treatment so that, if he is suddenly brought face to face with it, he will not be hopelessly immobilized by the enormity of the catastrophe. The exact incidence of cardiac arrest is not known. It does occur, however, at least once or twice a year on most active surgical services. Our own figures suggest that it occurs about once in every 7,500 anesthetizations. We are interested in the treatment of cardiac arrest because, by quick and premeditated action, a life may be saved that otherwise would be lost. However, we are even more interested in the prevention of cardiac arrest and hope thereby to decrease the incidence of this catastrophe.

ETIOLOGY

When one sets aside the problem of cardiac surgery, the causes of cardiac arrest for all practical purposes may be placed in the following categories: Reflex phenomena, an overdose of or sensitivity to an anesthetic agent, hypoxia, or a combination of these factors. In the first group, due to reflex phenomena (vago-vagal reflexes), if there is not too great a delay, the heart will start up with a normal rhythm, as a rule, after only a few moments of compression. In the second group (too much anesthesia), one has the simple problem of maintaining an artificial circulation and respiration until the excess anesthetic agent is washed out of the system. The heart will then resume its normal activity. In the third group, when hypoxia is the primary cause of cardiac arrest, the problem is complicated by the fact that the brain and heart may have suffered considerable damage before the period of arrest actually began. The safe period for the cessation of the circulation would be reduced accordingly. In many instances it has been difficult to state definitely the cause of cardiac arrest, in which event everyone is apt to blame it upon the vago-vagal reflex. There is experimental and clinical evidence to suggest, however, that the vago-vagal reflex may be much more active in the presence of hypoxia. An example of this is the healthy man who "fights the anesthesia" and is cyanotic as the endotracheal tube is passed. Cardiac arrest has been observed frequently under such circumstances.

PROPHYLAXIS

If the incidence of cardiac arrest is to be materially reduced, there must be maximum cooperation between the surgeon and anesthetist. The surgeon should not push the anesthetist too far in demanding deep anesthesia, and the anesthetist should remember that his objective is to maintain the highest possible arterial oxygen saturation and a normal pH of the blood. All agree that, if the anesthetic agents are carefully chosen and are administered in safe doses and if, above all, hypoxia and hypercapnia are avoided by adequate ventilation, this catastrophe should rarely occur. Cardiac arrest is not limited to poor-risk patients but occurs very frequently and perhaps most often in good-risk patients. This suggests that, since no difficulty is anticipated in such patients, the greatest

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Read before the Section on Surgery, General and Abdominal, at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

possible care is not exercised in their management. The fact that the margin of safety is so great in these persons may lead both the anesthetist and surgeon to rely too much upon that fact. The patient who is a recognized poor risk from the cardiac standpoint has a narrow margin of safety. It is especially important in such patients for the anesthetist to avoid hypoxia and hypercapnia. The surgeon is responsible for prophylactic considerations directly related to the operative procedure. Safeguards against sudden hemorrhage should be employed during the dissection. Strong traction on thoracic and abdominal viscera should be avoided.

Operations upon the heart constitute a separate category. Ventricular fibrillation is the great fear. The direct insult to the myocardium has been thought to be the inciting cause of the ventricular fibrillation. We formerly, as did many others, administered procaine hydrochloride or procaine amide (Pronestyl) hydrochloride intravenously in an effort to decrease the myocardial irritability. More recently we have abandoned that practice because of the lack of evidence of its usefulness. It is thought that the results have been just as good, if not better, since that time. We have come more and more to believe that the most important thing in the prevention of ventricular fibrillation is the maintenance of maximum oxygenation of the myocardium. It has been found that greater than normal ventilation may be required in patients undergoing heart surgery in order to keep the myocardium pink. Time and again the myocardium has been found to be slightly cyanotic with the usual amount of ventilation, but, when the ventilation is increased, the color of the myocardium may improve immediately. We feel that the securing of maximum oxygenation of the myocardium before direct trauma to it is the most important protective measure against ventricular fibrillation. The surgeon should stop and allow the anesthetist to make a conscious effort to obtain maximum oxygenation and optimal color of the myocardium, especially before cutting into either ventricular wall. We still employ procaine locally when entering the ventricles and believe it to be useful. Obviously the heart should be manipulated as gently and briefly as possible.

DIAGNOSIS

The early diagnosis of cardiac arrest is the most important single factor in its treatment, as we have previously stressed.[1] For the most part this must rest in the hands of the anesthetist. Since the patient can survive only about four minutes of a cessation of circulation, it goes without saying that valuable time may be lost if the anesthetist doesn't keep a constant observation of the patient. If the pulse is felt only every five minutes, it would obviously be possible for the circulation to have stopped for more than four minutes before it was first detected. It must be the objective of the anesthetist to avoid cardiac arrest but, if it should occur, to recognize that fact immediately. When the anesthetist announces that the pulse and blood pressure have suddenly disappeared, it must be assumed that the circulation has ceased. This is no time for consultation or meditation. The circulation must be started again. The desire to confirm the diagnosis of cardiac arrest before instituting treatment is understandable. However, the usual methods of determining whether the heart is beating are too time consuming and unreliable. If the surgeon is operating in the chest, he can immediately see or feel the heart. If he is operating in the abdomen, he can feel the heart through the diaphragm. If he is in the region of a large artery, he can feel that. On the other hand, time spent looking for a stethoscope to listen for the heartbeat or time spent with an ophthalmoscope trying to see whether blood is flowing through the retinal vessels may cost the patient his life. When the anesthetist reports that the pulse and blood pressure have suddenly and unexpectedly disappeared and the surgeon is not already in a position to feel the heart or a large artery, the left side of the chest should be opened in order to ascertain the true state of affairs immediately. Under such circumstances we have taken the point of view that to expose the heart is a diagnostic procedure.

TREATMENT

If the heart is to be exposed quickly, it is important that some thought be given to the problem before it arises. It would be nice to have such equipment as sterile instruments and drapes, but their absence should not cost the patient his life. All one really needs is a knife. A pair of gloves may be put on if they are immediately available. Given a knife, the surgeon should have his hand on the heart in about 15 seconds. The incision should be made in the left fourth or fifth interspace and carried down to the pleura; the pleura should be opened with the handle of the knife. Once the pleura is open, the underlying lung can be protected by a finger as the rest of the interspace is opened widely. The right hand can then be forced between the ribs and the heart palpated. If it is in asystole, it will be still. If it is in ventricular fibrillation, it may give the sensation of fine muscular twitchings. It is not important at this point to make such a differential diagnosis. If the heart is not beating forcefully, it should be compressed rhythmically with the right hand. The costal cartilage above and below may be cut with the knife in the left hand as intermittent cardiac compression is being carried on with the right hand. This will decrease the pressure of the ribs on the hand or wrist. A rib spreader will be helpful when available.

A small heart may be compressed satisfactorily with one hand by holding it between the thumb and fingers. When dealing with a larger heart, it is often better to compress it between the two hands. Some surgeons prefer to open the pericardium in order to compress the heart more efficiently. We prefer to remain outside the pericardium but to free the mediastinum anteriorly enough to get the hand partially around the heart. When the pericardium is opened, care should be taken not to penetrate the cardiac wall with the tips of the fingers or thumbs. The effectiveness of the cardiac massage may be judged by the production of a good pulse and bleeding from the wound. The vessels may be caught with hemostats when available. The rate of the cardiac compression should be as rapid as can be conveniently maintained. A rate of about 60 per minute is recommended, for it is difficult to maintain a faster rate. If two or more operators are available to work in shifts, a rate of 80 or more may be maintained. Our experiments have suggested that more blood is moved by the more rapid rate and that it is not profitable to allow a longer interval between compressions in order to allow the heart to fill.[2] If the heart seems empty, the blood volume should be increased by giving fluids intravenously at a fairly rapid rate. Caution must be observed, however, not to overload the circulation.

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[1] Johnson, J., and Kirby, C. K.: Cardiac Resuscitation, S. Clin. North America 29: 1745, 1949; Surgical Treatment of Ventricular Fibrillation, Ann. Surg. 134: 672, 1951; Cardiac Resuscitation, J. Mt. Sinai Hosp. 18: 141, 1951.

While the surgeon is producing artificial circulation, the anesthetist must induce respiration artificially. Mouth-to-mouth breathing may be used until proper equipment is available. An anesthesia machine with a face mask, using 100% oxygen, is the best method and should be used as soon as it is possible. Once the patient is well oxygenated, time may be taken to insert an endotracheal tube. It is the objective of the cardiac massage by the surgeon and the artificial ventilation by the anesthetist to produce adequate oxygenation of the blood and tissues of the entire body. If the patient's color returns to normal and there is a good palpable pulse, an adequate artificial circulation is probably being produced. If the heart does not start beating normally after a short period of adequate oxygenation, ventricular fibrillation should be suspected.

VENTRICULAR FIBRILLATION

The irregular movements of the myocardium felt on palpation are pathognomonic of ventricular fibrillation. When the fibrillary twitchings involve very small muscular segments, it may be necessary to visualize the myocardium to be certain of the diagnosis. In any event, the color of the heart must be returned to normal by means of adequate artificial circulation before efforts are made to defibrillate the heart. Occasionally a heart in ventricular fibrillation will revert to normal rhythm spontaneously. This may also occur after the use of procaine or procaine amide hydrochloride intravenously. The most reliable method of defibrillating the ventricles, however, is by electric shock.[3] The shock throws all the muscle fibers into a powerful contraction simultaneously, causing the heart to go into standstill thereafter. The ventricles are then apt to resume contraction with a normal rhythm.

The electric device used by us to defibrillate the ventricles is easily assembled. Actually, the current taken directly from the house line would probably be successful in most instances. An isolation transformer is placed in the circuit to decrease the risk to the surgeon. A variable resistance is used so that with a small heart, especially in children, the current (by the short circuit test) may be reduced to about 2 amperes. In the normal adult heart, the resistance must be almost or entirely removed from the circuit. With a very large heart, the regular house current (110 volts) may not be powerful enough to defibrillate the ventricles. We have, therefore, inserted a variac in our experimental defibrillator that will produce up to 270 volts. There is a very real danger, however, of producing burns of the myocardium with such high voltages, and routine use is not recommended. A smaller voltage (125 to 135 volts) should be used for routine purposes. The duration of the current is also important, especially when using high voltages, if burns are to be avoided. In recent experiments in our laboratory, it has been shown that 220 volts for 1/10 second will defibrillate hearts under conditions when 110 volts for 1/10 second will not.[4] In clinical practice, however, when 220 to 270 volts have been required to defibrillate the ventricles, the patients have not survived, possibly because of the circumstances requiring such high voltages. The size and character of the electrodes and the firmness with which they are pressed against the ventricles are also important variables in the amount of current actually delivered to the myocardium.

The surgeon should take every precaution to avoid an electric shock to himself or to the anesthetist. Time is available to take all possible precautions, since there is no rush to defibrillate the heart, as long as an adequate respiration and circulation are being maintained. The isolation transformer greatly reduces the possibility of the surgeon receiving a dangerous shock. By wearing two pairs of gloves and having insulated handles on the electrodes, the risk of a shock should be reduced to a minimum. The surgeon should also stand on a wooden stool and take care not to touch the operating table as the shock is applied. The anesthetist should remove his hands from the patient and the table as the current is applied. The current should be applied for less than 0.5 second when a single shock is used. For a series of shocks, the duration of each shock should be very brief. If the patient's entire body does not contract, the current is probably not strong enough. If the heart is not defibrillated upon the first attempt, repeated attempts should be made after obtaining maximum oxygenation of the myocardium.

RESULTS

During the seven year period from Jan. 1, 1946, to Jan. 1, 1953, there were approximately 95,000 anesthesias given at the Hospital of the University of Pennsylvania. Of these, about 70,000 were spinal or general anesthesias. If one discounts the operating room deaths due to such things as an uncontrollable hemorrhage and to operations directly upon the heart, there were 13 instances of cardiac standstill or ventricular fibrillation. These instances represent unexpected catastrophies. This would give an incidence of about 1 in 7,500 anesthesias. In addition, there have been six patients in whom ventricular fibrillation developed during direct attacks on the heart, a problem present only in hospitals where cardiac surgery is done. In previous publications, attempts at cardiac resuscitation upon patients suddenly dying in our wards were included in the data. With the enthusiasm of the resident staff for cardiac massage, this number has no statistical significance. There have been no successes in this group. It is not urged that all such efforts be abandoned, for a number of hearts have been started again only to fail later, but it is suggested that the circumstances under which patients die in the wards and the delay in instituting treatment, in general, mitigate against success. In the 13 instances of totally unexpected cardiac arrest in the operating room, 7 patients (including one with ventricular fibrillation) have been successfully resuscitated. In the six cases of ventricular fibrillation occurring during direct attacks on the heart, all hearts were defibrillated but only three of these patients survived.

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[2] Johnson, J., and Kirby, C. K.: Experimental Study of Cardiac Massage, Surgery 26: 472, 1949.

[3] Wiggers, C. J.: Cardiac Massage Followed by Countershock in Revival of Mammalian Ventricles from Fibrillation Due to Coronary Occlusion, Am. J. Physiol. 116: 161, 1936. Beck, C. S., and Mautz, F. R.: Control of Heart Beat by Surgeon, with Special Reference to Ventrical Fibrillation Occurring During Operation, Ann. Surg. 106: 525, 1937.

[4] Kirby, C. K.; Johnson, J.; Engelberg, J., and Rovis, R.: Ventricular Fibrillation: Experimental Study, to be published.

Attempted Cardiac Resuscitation in the Operating Room

	1946	1947	1948	1949	1950	1951	1952	Total
Excluding Cardiac Cases								
Attempts	1	2	1	2	2	3	2	13
Successes	0	1	0	2	2	1	1	7
All Cases								
Attempts	1	2	1	3	4	4	4	19
Successes	0	1	0	3	4	1	1	10

In 1949 and 1950 we were greatly encouraged by 100% success in the operating room. This excellent record has not been maintained in 1951 and 1952. Three of the six failures in these two years were in persons with very large hearts undergoing cardiac surgery when ventricular fibrillation developed. Shock of 220 to 270 volts was required to defibrillate the ventricles. It may be that the duration of the current was too long. At any rate, two of the patients exhibited obvious myocardial burns at autopsy. In the third, the heart reverted to fibrillation several times, and the patient died in the operating room. The other three patients might have been saved. There was too great a delay in two, and in one, a 74-year-old patient, the myocardium was badly torn during cardiac massage, the pericardium having been opened.

SUMMARY

It is suggested that every surgeon and anesthetist familiarize himself with the essential steps to be taken in the event of sudden unexpected cardiac arrest in the operating room. Once the circulation has stopped, it must be started again within about four minutes if the patient is to survive. When the surgeon is not in a position to feel the heart or a large artery, he should be prepared to expose the heart through the left side of the chest if the anesthetist announces that the blood pressure and pulse have suddenly and unexpectedly disappeared. If there is not too great a delay in instituting an adequate artificial circulation and respiration, the heart should resume a normal rhythm in a short time. If ventricular fibrillation is present, it is most effectively dealt with by electric shock, after the myocardium has been adequately oxygenated.

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CARDIAC DISABILITY AND DEATH CAUSED BY STRAIN: PROBLEM IN WORKMEN'S COMPENSATION

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There is much controversy on the causal relationship between physical and emotional strain and cardiac disability and death. Some believe that strain seldom produces cardiac disease. Others believe that it is a frequent cause of cardiac disease and death. In disability due to coronary disease, for instance, Master and co-workers [1] found that only 2% of 530 persons with coronary thrombosis had the attack during unusual exertion and 37% more during mild activity. They therefore conclude that an attack occurring after strain is merely coincidence. On the other hand, in 950 autopsy cases of all forms of coronary sclerosis in the armed services, Yater and co-workers [2] found that, in the younger age group, the terminal cardiac attack occurred during strenuous activity in as many as 32% and during mild and moderate activity in 52% more. In only 15% did it occur at rest. In 100 cases of fatal coronary sclerosis in young soldiers, reported by French and Dock,[3] 35% died one to several hours after vigorous exercise. Thus, statistics vary with the sampling of the population and with the definition of coronary disease and so they cannot be offered as proof.

Emotional and physical strain may produce disability and death in any form of cardiac disease, such as rheumatic, syphilitic, or hypertensive; discussion here will cover only the coronary atherosclerotic form of heart diseases because many patients here may show no symptoms or signs of heart disease until acute manifestations develop. From a viewpoint of cardiac disability, we must consider coronary atherosclerosis as a single entity disease. The use of such terms as coronary insufficiency, coronary failure, coronary thrombosis, myocardial infarction, atypical myocardial infarction and subendocardial myocardial necrosis [4] in describing the various manifestations of the disease give us only limited descriptions. At any given time, the clinical and electrocardiographic expressions of the disease depend only on the location, degree, duration, and rapidity of onset of the myocardial ischemia and the myocardial damage that the underlying coronary disease has produced in the patient; this idea was propounded by Hecht.[5] If no myocardial ischemia is produced, because of insufficient narrowing of the lumen or because of the presence of a good collateral circulation, the person may be symptom free, carry on normal activities, and the electrocardiogram may remain normal for many years.

If myocardial ischemia develops only on strain, excitement, or activity and subsides immediately after, the anginal syndrome will occur only while these factors are operative. The electrocardiogram, likewise, may show some abnormalities only during the ischemic phase. If local myocardial ischemia develops spontaneously or after effort and does not subside after rest, the anginal syndrome is severer, lasts much longer, and recurs more frequently. If the ischemia is prolonged and severe, focal necrosis of the heart muscle will occur, and the absorption of necrotic material may produce variable elevation in temperature, acceleration of the blood sedimentation rate, increase in the number of white blood cells, increase in the heart rate, and electrocardiographic abnormalities. The severity of these changes will depend upon the degree of necrosis. If the acute myocardial ischemia is extreme, circulatory collapse may occur due to cardiac asystole, ventricular fibrillation, or reflex peripheral vascular failure, and death may result before there is time for myocardial infarction to develop. If the patient survives, the subjective manifestations may continue for hours or days, and objective findings of massive infarction such as changes in the character of the heart sounds, gallop rhythm, tachycardia, drop in blood pressure, pulmonary congestion, and rise in temperature may develop. There may also be a marked acceleration of the blood sedimentation rate, a greater or lesser increase in the white cell count, and characteristic electrocardiographic findings of gross infarction.

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[1] Master, A. M.; Dack, S., and Jaffe, H. L.: Factors and Events Associated with Onset of Coronary Artery Thrombosis, J. A. M. A. **109**: 546 (Aug. 21) 1937.

[2] Yater, W. M.; Walsh, P. P.; Stapleton, J. F., and Clark, M. L.: Comparison of Clinical and Pathologic Aspects of Coronary Artery Disease in Men of Various Age Groups: Study of 950 Autopsied Cases from the Armed Forces Institute of Pathology, Ann. Int. Med. **34**: 352, 1951.

[3] French, A. J., and Dock, W.: Fatal Coronary Arteriosclerosis in Young Soldiers, J. A. M. A. **124**: 1233 (April 29) 1944.

[4] Littman, D., and Barr, J. H., Jr.: Acute Atypical Coronary Artery Insufficiency, Circulation **5**: 189, 1952.

[5] Hecht, H. H.: Concepts of Myocardial Ischemia, Arch. Int. Med. **84**: 711 (Nov.) 1949.

Looking at the disease from this broad aspect prevents the erroneous view that disability and death here may be due only to one particular pathological process such as coronary thrombosis. In Yater's series[2] of 950 autopsies, deaths from coronary disease were observed to have occurred in cases with or without coronary occlusion and with or without myocardial infarction. Furthermore, occlusion was found to be due to sclerosis alone in 39% of cases, to thrombosis alone in 23%, and to combined sclerosis and thrombosis in 25%. In 13% of cases that showed gross myocardial infarction, no occlusion was found. The occurrence of myocardial infarction without coronary occlusion and even without significant coronary sclerosis has been observed before. Gross and Sternberg[6] have reported 15 cases of the latter. The infarction here may be due to severe prolonged deprivation of the blood supply to the myocardium caused by coronary vasospasm, tachycardia, shock, severe anemia, polycythemia, and possible humoral elements such as excessive secretion of epinephrine or other vasopressor substances. Dack and co-workers[7] have observed 7 cases of subendocardial myocardial infarction in 40 fatal cases of pulmonary embolization. They attributed it to general anoxemia and reflex coronary vasoconstriction. Shock was also undoubtedly a factor.

Physical and/or emotional strain is a potent factor in precipitating these various acute manifestations of coronary disease; this has been demonstrated before by Paterson,[8] Horn and Finkelstein,[9] Nelson,[10] Blumgart,[11] Graybiel,[12] and others. Physical strain increases the aortic and, thus, the intracoronary pressure transiently and may produce acute changes in the coronary vessels in cases where there is marked atheromatosis. The main effect of emotional strain is to stimulate the sympathetic nervous system, producing the various tachycardias, arrhythmias, and cardiac overactivity, making greater demands on the coronary blood supply. It also produces general vasoconstriction and rise in pressure, which is transmitted to the coronary system. Sympathetic stimulation of the adrenal glands and the accompanying increase in epinephrine secretion further speeds the heart rate and raises the blood pressure. Waters and deSuto-Nagy[13] have demonstrated experimentally that epinephrine injection also produces necrotizing changes of the coronary arteries.

In many cases an acute coronary process is caused by intimal hemorrhage, often brought about by strain. Paterson[8] observed that capillary outgrowth occurs directly from the lumen of the coronary arteries in areas of intimal thickening. The thinness, fragility, and lack of support of the capillary walls and their exposure to the direct intracoronary blood pressure predisposes them to rupture. The accumulation of blood in the intima acutely accelerates the atherosclerotic process by the deposition of formed substances that induce reactive tissue response, acute degeneration, and extension of the atheromatous plaque toward the lumen of the coronary artery. Coronary thrombosis also appears to be caused in many cases by these hemorrhages, which induce disruption and dissolution of the intima, liberating thromboplastic material. Although transient, recurring rise in intracoronary pressure may thus be the main mechanism in the pathogenesis of acute coronary changes in most cases, a marked drop in pressure such as occurs in shock sometimes appears to be the underlying cause of coronary insufficiency, coronary thrombosis, and myocardial infarction. Blumgart and co-workers[14] observed 11 cases of multiple small coronary occlusions and 38 cases of single occlusions due to shock. They attributed the pathological changes to a fall in blood pressure, to blood concentration, and to tachycardia occurring in shock.

The occurrence of cardiac injury due to physical and/or emotional strain in the presence of coronary atherosclerosis is more frequent than is generally suspected. I have collected over 250 cases where an acute cardiac insult was definitely traceable to such strain. Many of these had no workmen's compensation claims, and the reliability of the history was unquestionable, as in the following example: A newly wed woman, 30 years old, while on her honeymoon participated in a strenuous handball game for 10 minutes; immediately after this, severe pain developed in the anterior portion of her chest, radiating to the back and left arm, accompanied by cold, clammy

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6. Gross, H., and Sternberg, W. H.: Myocardial Infarction Without Significant Lesions of Coronary Arteries, Arch. Int. Med. **64**: 249 (Aug.) 1939.

7. Dack, S.; Stone, J.; Paley, D. H., and Master, A. M.: Pulmonary Embolism: Precipitating Factor of Acute Coronary Insufficiency, Dis. Chest **15**: 72, 1949.

8. Paterson, J. C.: Factors in Production of Coronary Artery Disease, Circulation **6**: 732, 1952.

9. Horn, H., and Finkelstein, L. E.: Arteriosclerosis of Coronary Arteries and Mechanism of Their Occlusion, Am. Heart J. **19**: 655, 1940.

10. Nelson, M. G.: Intimal Coronary Artery Hemorrhage as Factor in Causation of Coronary Occlusion, J. Path. & Bact. **53**: 105, 1941.

11. Blumgart, H. L.: Relation of Effort to Attacks of Acute Myocardial Infarction, J. A. M. A. **128**: 775 (July 14) 1945.

12. Graybiel, A.: Diseases of the Heart: Review of Significant Contributions Made During 1942, Arch. Int. Med. **71**: 713 (May) 1943.

13. Waters, L. L., and deSuto-Nagy, G. I.: Lesions of Coronary Arteries and Great Vessels of Dog Following Injection of Adrenalin: Their Prevention by Dibenamine, Science **111**: 634, 1950.

14. Blumgart, H. L.; Schlesinger, M. J., and Zoll, P. W.: Multiple Fresh Coronary Occlusions in Patients with Antecedent Shock, Arch. Int. Med. **68**: 181 (Aug.) 1941.

perspiration, and a sensation of extreme weakness and fainting. She was removed to a hospital where examination disclosed evidence of posterior left ventricular wall infarction.

Among other cases that I have observed, the attack occurred during or immediately after an exciting argument or a competitive card game, during an exciting ball game, after mowing a lawn, during sexual intercourse, or other similar activities described before.[15] However, we must appreciate the fact that, by the time an attack occurs under strain, coronary atheromatosis in one or more branches has progressed to a stage where complete shutting off of the blood supply to a given portion of the heart may even occur spontaneously, without any known strain. For this reason the determination of causal relationship between strain and cardiac injury in any case is often difficult, especially in workmen's compensation cases where the reliability of the history may be questionable. I will attempt to present, however, certain criteria, illustrated by case reports, that may help us to decide if causal relationship exists between a given strain and a resulting cardiac injury.

Before discussing these criteria we must clarify the meaning of the term "cardiac injury" as determined clinically. By this term we mean the occurrence of more or less acute clinical manifestations and laboratory evidences of heart disease, following strain, which were not present before the strain. If heart disease was known to have been present before, we must have proof that an acute exacerbation, clearly precipitated by the strain, occurred. Furthermore, the clinical manifestations of heart disease following the strain must be of prolonged nature, not transient, and the damage must be clearly demonstrable. Thus, the occurrence of the anginal syndrome following strain that immediately subsides at rest does not constitute causal relationship of the strain and cardiac injury. It merely points to transient myocardial ischemia due to coronary insufficiency induced by the strain in the presence of underlying coronary disease and calls for the avoidance of such strain in the future. In other words, it is a warning sign that myocardial injury may ultimately result if the particular strain causing the anginal syndrome is continued.

The strain that brings about an acute attack must be very severe and must be followed immediately by the clinical signs of a cardiac insult to constitute causal relationship. It need not necessarily be an unusual type of strain, for, in the progressive course of coronary disease, a vulnerable stage is sooner or later reached when even a usual strain, provided it is of severe enough nature, may produce injury. Following is an example: A 51-year-old foreman in a clothing factory, who had never experienced any disturbances referable to his heart, had an argument with another worker about poor workmanship and then helped lift a machine weighing about 150 lb. (68 kg.). He immediately experienced severe pain in the precordium with cold sweat, nausea, vomiting, and collapse. He was removed to a hospital where a diagnosis of anterior left ventricular wall infarction was made. The close association of the attack with the excitement and the lifting of the heavy load in this case leaves no doubt of causal relationship. That he had before occasionally resorted to somewhat similar activities without cardiac injury is no argument against causal relationship. In the first place we must assume that the preexisting coronary disease was not advanced far enough before to be vulnerable. Secondly, we have no definite measure by which to gauge the exact amount of mental and physical effort employed at any given time in accomplishing the same work.

A major acute cardiac insult may be considered causally related to strain even if the onset of symptoms is not very severe and dramatic, provided the symptoms develop immediately after the strain and continue over a long period. The presence of the injury to the heart in these cases may occasionally be overlooked. The following is an example: A 59-year-old electrician was wiring a new building and had to pull four wires through a conduit, a distance of about 75 ft. (23 m.). The conduit had four bends at angles of 90 degrees each. To prevent the wires from getting stuck, he had to use strong jerks. He immediately felt a choking sensation in the precordium and the throat, with a "sense of weight" over his chest, which was followed 15 minutes later by severe pain in both shoulders. He rested one hour and was taken home because he could not continue working. Throughout the rest of the day he had a sensation "like gas" in the chest, which was partly relieved by rhubarb and soda. He returned to work the following day and continued working for six days, periodically experiencing "troubled breathing" and some of the sensations noted above. He was finally examined by a doctor, who took an electrocardiogram that revealed anterior left ventricular wall infarction. Intimal capillary hemorrhage induced by the strain undoubtedly caused acute changes in a preexisting atheromatosis in this case, with progressive occlusion and infarction over a period of days.

Injury to the heart caused by strain may be of temporary nature, and recovery is possible. This is true especially where no extensive myocardial infarction occurred. If recurrence of myocardial injury takes place at a later time while the person is engaged in usual, nonstrenuous work, the recurrence can not be attributed to the strain that caused the original injury. This is illustrated by the following case: A man 58 years old, who never had symptoms referable to his heart, had to push a hand truck containing tools weighing 150 to 200 lb. (68 to 90 kg.) up a ramp at an inclination of 30 degrees. When he reached the top of the ramp, a height of about 30 ft. (9.2 m.), he suddenly felt severe pain across the anterior portion of his chest, which radiated into the left arm and left hand. The pain lasted about one-half hour and recurred on many occasions during the rest of the day, with freedom from pain for about one-quarter to one-half hour between the attacks. He was sent home from work, and, after he rested through the following day, the pain subsided. He then returned to work, and the pain recurred again on many occasions. He was finally removed to a hospital where he remained two weeks. Several electrocardiograms revealed an acute ischemic pattern and possible necrosis of the left ventricle. He experienced pain intermittently for about six weeks, but with continued rest it gradually diminished, so that about seven months after the onset the pain had entirely subsided, and he returned to work. An electrocardiogram obtained at this time was within normal limits. He worked for six months thereafter at usual, nonstrenuous work without any discomfort whatsoever. At the end of that time, and while continuing his usual work, he again began to have recurring attacks of pain, and electrocardiographic evidence of myocardial ischemia again developed.

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[15] Sigler, L. H.: Cardiovascular Disease: Fundamentals, Differential Diagnosis, Prognosis and Treatment, New York, Grune & Stratton, Inc., 1949.

It is evident here that the patient had marked atherosclerosis of the coronary system and that an acute coronary insult resulting in myocardial ischemia and possible necrotizing changes was induced on the first occasion by the severe strain. At prolonged rest, a sufficient collateral circulation developed with clinical recovery. The subsequent attacks were in the nature of spontaneous onset of acute coronary insufficiency, due to the progress of the coronary disease, and had no relation to the original strain.

The question whether prolonged and repeated strain under unhealthy conditions may bring about cardiac injury, even though such strain may be of a usual kind and not of a sudden acute nature, cannot be definitely answered. Nevertheless, if a person who was apparently asymptomatic before subjecting himself to such strain showed symptoms and signs of cardiac injury during the performance of his work and such symptoms and signs persisted, it is reasonable to claim causal relationship. Following is an example: A seaman, 31 years old, was at sea on board a gasoline transport freighter. During the entire trip he had to do arduous cleaning of large empty gasoline tanks and chipping off of old paint with a heavy hammer. The air in the tank had a heavy gasoline odor, and his sleeping quarters had poor ventilation. While doing his work he experienced a peculiar intermittent oppression in his chest, and at night he was awakened from his sleep with severe precordial pain lasting one hour. The pain recurred periodically the rest of the trip. When he reached New York, a doctor prescribed glyceryl trinitrate (nitroglycerin), which gave him relief. On his return ocean trip the pain persist, and when he reached shore he was hospitalized. Repeated electrocardiograms revealed an ischemic pattern with necrosis localized in the posterior wall of the left ventricle. After seven weeks of hospital care, he had complete symptomatic relief, and the electrocardiogram showed only residual damage. He returned to lighter work and has had no recurrence of symptoms. We must assume here that the strenuous activities together with improper hygienic conditions produced in this case acute coronary changes with myocardial ischemia in the presence of latent, asymptomatic, preexisting coronary disease.

As was stated before, an acute cardiac insult frequently occurs apparently spontaneously. In many such cases, the attack may be traced to overeating, to reflex disturbances from other organs, and to other similar causes. From a viewpoint of workmen's compensation, attacks traced to these sources, even though occurring while at work, are, of course, not compensable. Nevertheless, strenuous work performed at the same time that the other factors are operative may be contributory, and, therefore, compensability should perhaps be considered in some cases where it is now regarded only as a definite additional causative factor. The physician therefore often encounters a difficult problem in rendering an opinion in some of these cases. Following is an example: A volunteer fireman, 43 years old, went with his company on a half-mile march that lasted about one hour. He had no subjective complaints before, during, or soon after the march. He and his group then indulged in eating considerable amounts of food, consisting of frankfurters and sauerkraut on rolls, and drinking a great deal of soda and beer. He joined in the singing and playing. After one-half hour severe chest pain developed, and he fell to the ground in an unconscious state and in shock. He was removed to a hospital and died five days later.

Autopsy revealed some cardiac enlargement, softening of the anterior wall of the left ventricle, some degenerative changes of the myocardial fibers, atherosclerosis of the ascending aorta with distortion of both coronary ostiums, intimal coronary sclerosis with pinpoint narrowing of the lumen of the proximal 3 cm. of the left coronary artery. At a compensation hearing the question arose as to whether or not the march of one-half mile was the precipitating cause of the acute cardiac insult. Inasmuch as there were no symptoms referable to the heart either during or soon after the completion of the march, it sounded logical to assume that the march had no effect on the heart. On the other hand, the excitement, overeating, and copious drinking for a half hour after the march, with their reflex effect on the heart, could explain the onset of the acute condition.

In most cases, the physician's opinion as to causal relationship between strain and an acute cardiac insult depends largely upon the reliability of the history in the case. Following is an example: A 49-year-old man, a plumber, stated that he has been perfectly well before the incident in question. He was hanging a wash basin weighing about 40 lb. (18 kg.). He claimed that the basin slipped, and, to prevent it from falling to the floor, he had to lean forward with great force to grasp it. He immediately had a feeling of constriction in the precordium, which lasted several hours and was associated with nausea and cold sweat. He was taken to a hospital where he remained six weeks. During his stay in the hospital, there was no demonstrable clinical evidence of gross myocardial infarction. Repeated electrocardiograms showed an ischemic pattern. He continued experiencing recurring precordial pain on any exertion for many months after he left the hospital. It developed at the compensation hearing that he had been subject to recurring spontaneous attacks of chest pain for a long time before the work episode, but the one he experienced at his work was more severe.

From the fact that the patient had recurring attacks of coronary insufficiency for a long time before the particular work incidence and that no changes other than ischemia were noted in the heart, we may assume that the work was not the underlying cause of the onset of ischemia. That it might have temporarily accentuated the process is a possibility. However, a temporary accentuation is different than an initiation of a process from a compensation viewpoint. The mere lifting of a 40 lb. basin and holding it against the wall, discounting his claim that he suddenly had to use "great force" to prevent it from falling, is not sufficient strain to initiate an attack of an acute cardiac insult. Attacks of myocardial ischemia, necrosis, and gross infarction may be followed by complete recovery, partial disability, or total disability. The outcome in any case depends mainly upon the degree of residual damage, the severity of the underlying coronary disease, the frequency of recurrence of acute insults, and, to a great extent, upon the early recognition and proper management of the individual case. The survival period even after acute myocardial infarction may often be very long if there are no recurrences. In a series of cases I reported,[16] there was one patient who lived as long as 35 years. The average, of course, was far lower.

The amount of activity a person can carry on after recovery from an attack may be amazing. Lewis [17] reported on a 43-year-old man who, on recovery from posterior wall infarction, went skiing on many occasions at high altitudes and carried on a great deal of other activities for five and a half years after the attack. I have observed many patients suffering from the effects of myocardial infarction who have carried on a great deal of activity for many years after recovery as in the following example: A 43-year-old shipping clerk, with the driver of a truck, lifted several linoleum rolls, club chairs, and sofas from the ground into the truck. He immediately experienced severe pain across the anterior portion of the chest that was accentuated as he continued working and was soon followed by marked weakness, cold perspiration, and pallor. The pain recurred with greater or less severity on his way home, and, 35 minutes after he arrived home it became very excruciating and lasted all through the night. An electrocardiogram two days later revealed anterior left ventricular wall infarction. After two months of rest, the electrocardiogram returned to normal, and he made complete symptomatic recovery except for slight precordial discomfort on marked exertion. It is now seven years since the attack, during which time he has continued working without discomfort, performing practically the same type of heavy work he had done before. The electrocardiogram also has remained normal.

In a follow-up of 412 cases of coronary occlusion and 141 cases of coronary insufficiency for five years after the attack, Master and Jaffe [18] found that 83% of these patients were employed, with 60% working full time. My experience in this area has shown approximately the same percentages. Partial and even total disability may follow an acute cardiac insult in many cases. The causes may be (1) paroxysmal attacks of severe tachycardias or arrhythmias originating from an irritable focus in the heart induced by the injury; (2) recurring myocardial ischemia and infarction; (3) severe anginal attacks; (4) congestive failure; and (5) emotional disturbances that are often associated with fear that death may result from work. In some cases more than one of these factors are operative.

It is often difficult to determine the extent of residual cardiac disability. Where the amount of remaining damage is marked, and objective manifestations of heart disease such as congestive failure and recurring severe tachycardias and arrhythmias are evident, we can easily determine the extent of disability. Even in the presence of the anginal syndrome alone, which is mainly a subjective manifestation, we can often tell if the manifestation is real and serious by associated visible phenomena that the patient exhibits. In some cases, however, it is hard to tell if the complaints are real or feigned as in the following example: A man, 59 years old, lifted with another man a barrel of cement weighing about 200 lb. (90 kg.) and carried it a distance of about 5 ft. (1.5 m.). He immediately experienced severe pain in the left anterior precordium and left arm down to the fingers, and he lost consciousness. He was removed to a hospital where evidence of posterior left ventricular wall infarction was found. For a period of five years following his discharge from the hospital he claimed to have recurring precordial pain and attacks of dizziness. From time to time he appeared to have lost consciousness and to have convulsive-like movements and marked tachypnea. On many occasions he was picked up on the street during these attacks and was removed to different hospitals only to be soon discharged because of lack of abnormal physical findings. The electrocardiogram was persistently stable, showing merely the remains of the old infarction. Furthermore, he lived on the fourth floor of a walk-up building and was observed to go up and down the four flights several times a day without discomfort. I had the occasion to observe him during one of his attacks. It consisted of induced spasms of various muscle groups and tachypnea with attempt at fainting. He showed no evidence of brain irritation or of a hyperactive carotid sinus reflex. There were also no changes in the heart rate or rhythm during the attack, ruling out possible transient heart block with the Adams-Stokes syndrome. That myocardial infarction developed after strain and that he was thus entitled to disability compensation, there is no quesetion. It is questionable, however, if the disability should have been of such long duration, because the symptoms he exhibited could not be attributable to heart disease or its sequelae. The duration of disability following cardiac injury due to strain varies in different cases and depends upon many factors, the most important being the functional capacity of the heart. Each case must be studied individually before arriving at an opinion. The ultimate prognosis in any case depends largely upon the early recognition of the underlying pathological changes and the proper medical management of the individual case. Contrary to the usual present day practice of early ambulation, it has been my experience that, in serious acute myocardial damage, long bed rest followed by prolonged relative rest is essential in the prevention of irreparable permanent damage. The extent and duration of rest should be prescribed carefully according to the needs of each individual patient.

SUMMARY

Physical and emotional strain may be definite exciting factors in the pathogenesis of acute coronary changes and myocardial injury in the presence of coronary atherosclerosis. Inasmuch as an acute insult frequently occurs spontaneously, however, the causal relationship between a given strain and the resulting myocardial injury is often open to controversy. Such relationship should be considered established when a severe strain is followed by acute cardiac symptoms and definitely demonstrable acute myocardial damage. This is true even if similar strain has produced no ill effects before when the coronary atherosclerosis was not "ripe" for an acute insult. An honest history of the events leading to an attack is most essential in establishing causal relationship.

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[16] Sigler, L. H.: Prognosis of Angina Pectoris and Coronary Occlusion: Follow-Up of 1,700 Cases, J. A. M. A. **146**: 998 (July 14) 1951.

[17] Lewis, W. H., Jr.: Coronary Occlusion: Report of Unusual Activities After Recovery, J. A. M. A. **114**: 484 (Feb. 10) 1940.

[18] Master, A. F., and Jaffe, H. L.: Complete Functional Recovery After Coronary Occlusion and Insufficiency, J. A. M. A. **147**: 1721 (Dec. 29) 1951.

The incidence of clinical recovery from an acute myocardial insult and the rate of continued employment is high. If another acute coronary insult with myocardial injury occurs in the course of usual activity after complete clinical recovery from an acute insult due to strain, the second attack can not be attributed to the original strain, which brought about the first attack. It should be considered merely a spontaneous insult in the course of progressive coronary degeneration. If the second attack occurs after unusual strain, the cardiac injury should be attributed to the second rather than the first attack. Partial or total permanent disability may often follow a cardiac injury due to strain. The extent of disability of each person should be gauged primarily by the degree of underlying coronary disease, the extent of residual permanent myocardial damage, and the functional capacity of the heart.

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EXPERIENCE WITH THE MECHANICAL HEART

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It has been approximately three years since the mechanical heart project was started. The apparatus is so devised that four different types of substitutions for the heart and lungs can be performed. These consist of (*a*) bypass of the right side of the heart, (*b*) bypass of the left side of the heart, (*c*) bypass of both sides of the heart while the lungs continue to perform their functions, and (*d*) bypass of the heart and lungs while the mechanical oxygenator performs lung function. A detailed description of the apparatus has already been published.[1]

There were many problems to be solved during the early work. These chiefly concerned the problems of clotting, hemolysis, contamination, and uncontrollable oozing. The trouble that was encountered with clotting has been largely eliminated by giving the proper dosage of heparin and by coating the mechanical apparatus with silicone, which greatly tends to lessen the clotting process. Much work was done in the experimental engineering laboratory to construct the type of pump that is the least injurious to the blood. The apparatus that was selected seemed to handle the blood with the least destruction. Since the apparatus is constructed so that all parts that contact the blood are sterilized by ordinary autoclaving, the problem of infection has not been significant. In a total of over 100 animal experiments, there was not one instance of blood stream infection after extracorporeal circulation. The problem of oozing during an operation in which a large amount of heparin is used is still a formidable problem. There need not be excessive loss of blood, however, if the bleeding points are carefully ligated. Most of these procedures required considerable time, and it was not necessary to give protamine solution at the conclusion of the operation, since the effect of the heparin had begun to wear off.

BYPASS OF RIGHT SIDE OF HEART

Several investigators have successfully bypassed the right side of the heart in animals. Leeds, Puciss, and Siegel[2] as well as Sewell and Glenn[3] were among the first to report substitutions for the right side of the heart. With a bypass of the right side or a bypass of the entire heart, there are certain hypotensive reflexes present that may be severe, especially if some degree of anoxia exists. The systemic blood pressure is partially regulated by this reflex mechanism on the right side. As the atrium and great veins become distended, nervous impulses traveling through the vagus nerve are sent upward to the brain and cause an acceleration of the heart rate and an increase in the systemic pressure. Conversely, as the atrium and great veins are emptied and the pressure in them is diminished, a nervous impulse is initiated that causes a slowing of the heart and a fall in the systemic blood pressure. If significant anoxia exists, this hypotension may be severe. It is imperative, therefore, that good oxygenation be maintained during the procedure.

In a bypass of the right side of the heart, the blood is drawn from the right atrium and passed through the right side of the mechanical heart and back into the branch of the pulmonary artery supplying the right lower lobe of the lung. A cannula is placed in the artery to the lower lobe so that it points centrally, and in this manner blood is supplied to the middle lobe, the right upper lobe, and the entire left lung. Figure 1 illustrates the blood flow in the bypass of the right side. The right ventricle is thereby completely bypassed. The pulmonary artery proximal to its bifurcation then can be totally occluded. This prevents backflow from the pulmonary circuit and permits ex-

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From the Research Division of Harper Hospital.

Read before the Section on Surgery, General and Abdominal, at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

This study was aided by grants from the Michigan Heart Association and Mr. C. E. Wilson.

The artificial heart mechanism reported here was made by the Research Laboratories Division, General Motors Corporation.

[1] Dodrill, F. D.; Hill, E., and Gerisch, R. A.: Some Physiologic Aspects of Artificial Heart Problem, J. Thoracic Surg. 24: 134, 1952.

[2] Leeds, S. E.; Puciss, I., and Siegel, P.: Shunting of Blood from Right Heart by Means of Pump with Operation on Interior of Heart, in Surgical Forum of the American College of Surgeons, 1950, edited by O. H. Wangensteen and others, Philadelphia, W. B. Saunders Co., 1951, p. 265.

[3] Sewell, W. H., Jr., and Glenn, W. W. L.: Experimental Cardiac Surgery: II. Further Observations on Development of Perfusion Pump for Purpose of Shunting Venous Return Directly into Pulmonary Artery, in Surgical Forum of the American College of Surgeons, 1950, edited by O. H. Wangensteen and others, Philadelphia, W. B. Saunders Co., 1951, p. 265.

posure of the pulmonary valve. The blood also may be taken from the venae cavae, and clamps may be placed across the cavae between the cannulas and the atrium so that no caval blood enters the atrium. If this method is used, a separate plan for handling the coronary sinus blood must be used. In addition, there is considerable flow from the thebesian system into the right heart that also must be handled separately.

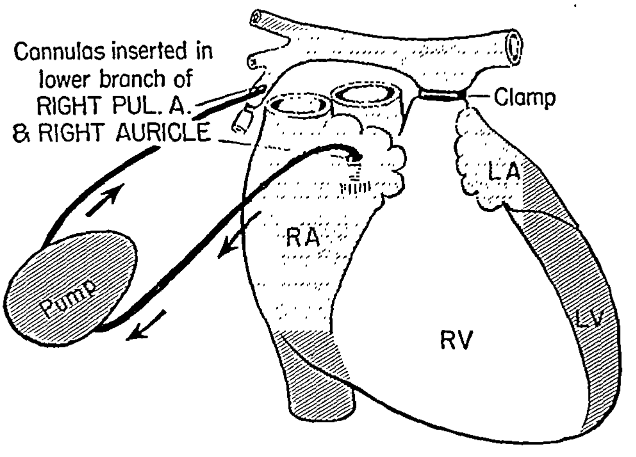

Fig. 1.—Diagram showing method of bypass of the right side of the heart.

There are not many diseases of the heart in which a bypass of the right side is a practical procedure. Obviously both the interventricular and interatrial septums must be intact for this procedure. Diseases of the pulmonary and tricuspid valves are examples. Unfortunately the majority of patients with pulmonary valve obstruction have other defects, particularly defects of the septums that preclude a right bypass. Some patients with congenital pulmonary valve stenosis, however, do not have such concomitant defects and the right bypass is a practical procedure in these patients. In patients with congenital pulmonary stenosis, a defect in either of the cardiac septums is manifested by some lessening of oxygen saturation and concomitant polycythemia. Moreover, if a significant right to left shunt exists, it may be demonstrated by angiocardiography; therefore, if no lack of arterial oxygen saturation exists and if angiocardiography fails to demonstrate a right to left shunt, it is probable that none exists. It should be borne in mind, however, that, with a defect in the septum and with a pressure in the right ventricle that equals that in the left, there is no shunting of blood from right to left, although the actual defect exists.

A 16-year-old boy with congenital pulmonary stenosis and apparently without a defect of the septums was successfully operated on on Oct. 21, 1952. This patient was large for his age, weighing 178 lb. (80.7 kg.). The history included congenital heart disease since infancy. During the past several years, there was much disability from dyspnea on slight exertion. There was a loud harsh systolic murmur over the pulmonary valve area that completely replaced the heart sounds. The blood pressure was 110/70 mm. Hg. The electrocardiogram showed marked right ventricular hypertrophy and strain. The thoracic roentgenogram showed enlargement of the right side, with diminished vascularity of the lung fields. On fluoroscopic examination of the thorax, no pulsations were seen in the arterial branches, although the main pulmonary arteries were greatly dilated. Cardiac catheterization showed that the right ventricle pressure was 190/0 mm. Hg. The pulmonary artery could not be entered at this catheterization. The arterial oxygen saturation was 90 vol. %. The red blood cell count was 4,950,000 per cubic millimeter. The remainder of the examination was essentially normal. Since this patient had a high ventricular pressure and since there was no evidence of polycythemia, clubbing, or a right to left shunt, it was felt that a defect of the interventricular or interatrial septum did not exist. The arterial oxygen saturation of 90 vol. % could be explained on the basis of low pulmonary artery pressure.

The heart was exposed through a transverse incision in the anterior thorax. The third intercostal spaces on both sides were incised; the sternum was transected; and both pleural cavities were opened widely. This gave a complete exposure of the heart. The preoperative diagnosis was substantiated by the presence of a vigorous systolic thrill at the base of the pulmonary artery as well as the marked right-sided enlargement. The right atrium was huge. The main pulmonary artery was greatly dilated. The right atrium was cannulated with a large cannula and another cannula was placed in the pulmonary artery to the right lower lobe and pointed centrally so that the blood could flow to the middle lobe, right upper lobe, and the entire left lung. The distal portion of the artery to the lower lobe was occluded. The mechanical apparatus was ready to be connected and to take over the function of the right ventricle. With the patient under anesthesia, a Cournand cardiac catheter was placed in the right ulnar artery and passed upward into the innominate artery. This was connected to a direct writing apparatus so that the arterial pressure could be recorded continuously. A continuous electrocardiogram was recorded. These two records were carefully observed by the cardiologist during the operation. The patient was

Fig. 2.—Photograph showing stenotic pulmonary valve at operation in 16-year-old boy with congenital pulmonary stenosis.

given 5 mg. of heparin per kilogram of body weight, and to the amount of blood necessary to fill the artificial mechanism was added 1 mg. of heparin per 100 cc. of blood. The mechanical heart was then slowly turned on until the right ventricle was completely bypassed. At this time, the thrill at the base of the pulmonary artery was no longer present, indicating that blood was not being ejected from the right ventricle. A clamp was then placed across the main pulmonary artery proximal to its bifurcation. Another light, noncrushing clamp was placed across the pulmonary conus, and the pulmonary valve was completely isolated from the circulation. A transverse incision was then made in the base of the pulmonary artery, and the stenotic pulmonary valve was readily exposed. It was markedly stenotic and approximately 5 mm. in diameter. Figure 2 shows the stenotic pulmonary valve in this patient at operation. A valvuloplasty under direct vision was carried out. The pulmonary artery was totally occluded for a period of 25 minutes while the mechanical heart completely took over the function of the right ventricle. During this time, the left side of the heart and the lungs continued to perform their functions; the patient remained in apparently good condition. At the completion of the valvuloplasty, the incision in the base of the pulmonary artery was closed; the clamps were then removed; and the mechanical heart was slowly shut off, allowing the right ventricle to resume its former function. Figure 3 is a record of the electrocardiogram and arterial pressure pattern during the time the pulmonary artery was clamped off. The canulas were removed. The artery to the right lower lobe was sutured, and the atrial appendage was ligated.

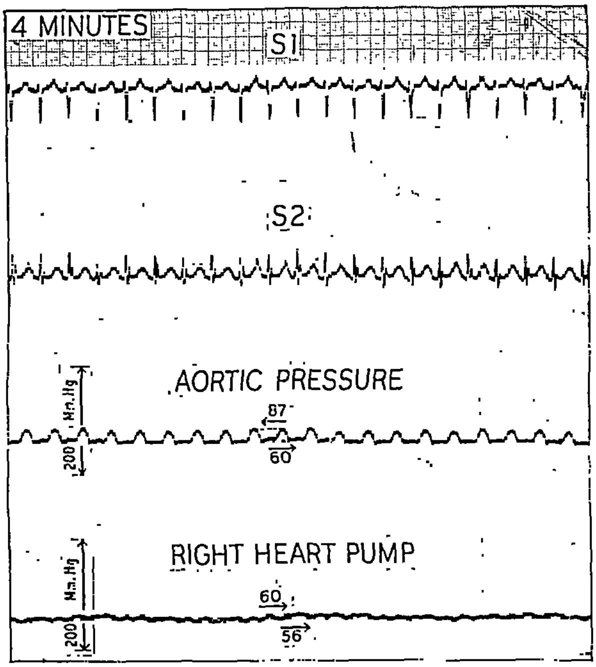

Fig. 3.—Electrocardiograms, aortic pressure, and pressure in the right side of the mechanical heart during bypass of right side of the heart in a 16-year-old boy.

This patient made a good recovery, although during the first few postoperative days there was evidence of mild pulmonary edema demonstrated by roentgenologic examination as well as by some mild hemoptysis. It was not definitely known whether this pulmonary edema was due to the fact that the mechanical heart was supplying blood to the pulmonary circuit under a greater pressure than the lungs were accustomed to or whether a sudden and great enlargement of the pulmonary valve also tended to produce pulmonary edema. This cleared within a few days, and from that point the patient made an excellent recovery. The cardiac catheterization was repeated six months later when the pressure in the right ventricle was 50/0 mm. Hg. It is now seven months since the operation, and the patient continues to remain in excellent condition. He is no longer dyspneic and, in fact, is carrying on as a normal person.

BYPASS OF LEFT SIDE OF HEART

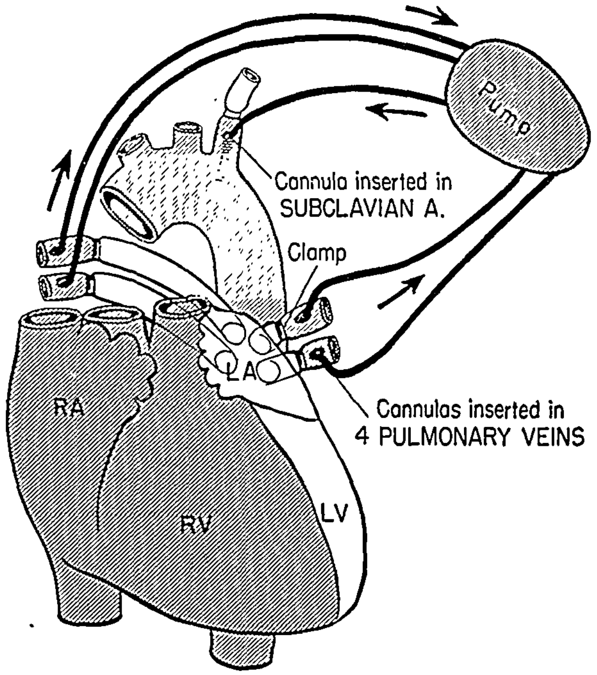

Fig. 4.—Diagram showing method of bypass of the left side of the heart.

A bypass of the left side of the heart has been carried out experimentally by several investigators. Among the first to do this procedure were Sirak, Ellison, and Zollinger,[4] Kantrowitz and Kantrowitz,[5] Wesolowski and Welch,[6] and others. Extensive left-sided bypasses have been carried out in animals by myself and my associates. The work has reached a gratifying stage wherein the left side of the heart in dogs may be completely bypassed with opening of the left atrium and exposure of the mitral valve with almost perfect results. During the last 15 or 16 consecutive experiments in dogs in which the left atrium and mitral valve were exposed, there was earlier days of work with the mechanical heart, it was felt by some that a unilateral bypass of the heart could not be carried out because the remaining side could not continue to perform its function. Apparently this is not true. It has been definitely shown by both prolonged animal experimentation and the results in living patients that the function of one or the other ventricles may be taken over by mechanical means while the other side and the lungs continue to perform their functions.

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[4] Sirak, H. D.; Ellison, E. H., and Zollinger, R. M.: Cardiotomy into Empty Left Ventricle, Surgery 28:225, 1950.

[5] Kantrowitz, A., and Kantrowitz, A.: Observations on Use of Experimental Artificial Left Heart, in Surgical Forum of the American College of Surgeons, 1950, edited by O. H. Wangensteen and others, Philadelphia, W. B. Saunders Co., 1951, p. 265.

[6] Wesolowski, S. A., and Welch, C. S.: Pump Mechanism for Artificial Maintenance of Circulation, in Surgical Forum of the American College of Surgeons, 1950, edited by O. H. Wangensteen and others, Philadelphia, W. B. Saunders Co., 1951, p. 226.

It is easier to connect the mechanical heart oxygenator to the anatomic structures than to do a unilateral bypass. With this procedure, blood is taken from the right side and passed through the mechanical heart oxygenator and back into the aorta. This required only two cannulations that are done on the right side. The connection of the mechanical apparatus to the anatomic structures in which the lungs are used for their functions is more difficult from the surgical standpoint. If the lungs can be used for their natural functions, however, it is probably more satisfactory than mechanical oxygenation. All of this work with the mechanical heart is in its infancy. The results demonstrated to date by the various investigators working in this field offer hope that eventually the heart may be bypassed for various types of intracardiac procedures. Blind procedures to correct intracardiac diseased valves represent a great step forward in surgery. Large numbers of patients have been relieved of their symptoms by these methods. It is probable, however, that a much more precise and exact corrective procedure can be performed on these deformed valves, if they can be exposed and the surgery done under direct vision. There is practically no surgical procedure carried out in any part of the body, aside from the heart, that is not under direct vision.

SUMMARY

A discussion of various ways of bypassing of the heart is presented. These consist of a bypass of the right side, the left side, and both sides of the heart, with the lungs for their natural functions, and a bypass of the heart and lungs. Four patients have been successfully operated on by one of these procedures. The pulmonary valve on the right side and the mitral valve on the left side have been successfully exposed and surgically corrected with survival of the patients.

OTOSCLEROSIS IN IDENTICAL TWINS

FACTORS IN ONSET, EXACERBATION, AND STABILIZATION

Edmund Prince Fowler, M.D., New York

In 1947 I published in detail my findings in a study of five pairs of identical twins with otosclerosis.[1] These data will not be repeated here, since the discussion in this paper will concern the etiology of otosclerosis. Heredity looms large in the picture of otosclerosis because it occurs more frequently in some families and generations than in others. However, although heredity is one factor and a very real factor, it is the sole cause neither of otosclerosis nor of any other dyscrasia. More properly it is a predisposition or abnormal sensitiveness to critical internal and external environmental factors that brings it into being. Predisposition and abnormal sensitiveness may be and commonly are inheritable and may operate by way of the soma or psyche or both in parents, in offspring, and in siblings in varying degrees for generations or forever. There is a constitutional "pecularity" or
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Identical twins are supposed to be genetically similar because both twins come from the same egg, but I have repeatedly found otosclerosis clinically limited to one twin or clinically severer or appearing some years earlier in one twin than in the other. Moreover, in one or both of a pair of identical twins, as in nontwins, one ear alone may reveal the presence of deafness due to otosclerosis. This occurs in about one-third of the twins I have
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and the autopsy had been performed a few years later, both ears would not have shown the lesion. Both heredity and environment are frequently slow in their manifestations. It is interesting to note that unilateral otosclerosis was observed oftener in the younger than in the older patients I have examined. The two ears of any person might be considered identical twins, as they both come from the same egg and usually look much alike, and so, both in identical twins and "identical ears," we are provided with an opportunity for studying differences in internal and external environmental factors affecting one or the other or both.

OPPORTUNITIES FOR STUDY

Our knowledge concerning the inheritance of right and left side differences is confused, even our knowledge of the mechanism of right and left handedness. Variations in blood supply, whether anatomic, traumatic, or pathoautonomic, are possible factors in some persons. These factors may differ in any two persons, in fraternal twins, in identical twins, and, generally but not so obviously, in any one person's pair of ears. I call attention to these observations because they suggest several possibilities for research on our problems.

Recently isotopic tracer studies reveal that calcium is rapidly withdrawn from and redeposited in the bones of human beings as it is in animals. Human bone metabolism and its variations can now be measured. It would seem that at long last we are in a position to carry these studies on to confirmation by coordinated clinical and preclinical laboratory findings. In any event we should soon have some additional data for pertinent consideration. I anticipate that it will be possible to determine preclinically the changes in bone metabolism brought about by emotional stress. I believe that, in the presence of an inherited predisposition to otosclerosis, such changes in bone metabolism will be found to be at least one of the determining factors in the etiology of the lesion of otosclerosis and of its exacerbation and stabilizations.

The unique bone dyscrasia producing the typical losses of hearing observed in otosclerosis does not effect the hearing until the annular ligament of the stapes footplate is affected sufficiently to impede airborne sounds, or until the auditory neural elements become involved. The time lapse between the onset of the lesion of otosclerosis and the appearance of the outstanding symptoms (deafness) may be months or even years, depending on the location, multiplicity, rate and intermittency of growth, and the direction of extension of the lesion. If the rate of growth alone could be estimated, some closer judgment of this time lapse would be possible. Since we do not possess this knowledge, all that can be established is that the activating etiological factor must always be sought, not at the beginning of the deafness or at any period following its exacerbation, but months or years before the deafness occurred, increased, or became stabilized. It may be necessary to search for a factor preceding birth or in the family history. In my opinion the neglect of this clinical approach accounts in part for our abysmal ignorance of much of the etiology of otosclerosis and of its progression. We have failed because our laboratory and clinical studies have been focused too much on the present, when most or all of the signs and symptoms accompanying the incipiency of the lesion have faded. When suggestive symptoms and abnormal laboratory results have been found, I suspect that they were obtained during or near periods of sufficient activity of the factors involved to render them reflectable in any abnormalities observed. However, even in such instances, an exacerbation of the lesion may not have resulted in an increase in the deafness for some time. There are two lines of preclinical attack open to us: (1) family histories (heredity) and (2) personal histories, especially preclinical symptoms as revealed by emotional states, fluid and solid tissue chemistry, and neurocirculatory and metabolic variations. Clinical phenomena observed may be assigned etiological status when, in truth, they are merely coincidental or secondary in nature. Moreover, although they occur with onset, exacerbation, stabilization, recurrence, or cessation of other symptoms, their relationship to a disease may be one of effect rather than of affect (caused by rather than the cause of). Such may also be the case when they are related to preclinical observations.

CLINICAL FINDINGS

In otosclerosis the onset of deafness and its periods of rapid increase appear to coincide in time with, or more commonly subsequent to, puberty, childbearing, the onset of the menopause, severe illness, psychic traumas, and stress and anxiety, all of which are accompanied by major autonomic nervous system readjustments or dislocations. When a careful history is obtained, I have found that there is usually a considerable interval of time between these happenings and the deafness that follows them. I have never observed deafness from otosclerosis occurring after the menopause unless it had been present before then, but I have frequently observed an increase in the deafness following the menopause. The difficulty has been to relate properly such episodes to etiology, activation, and stabilization of the lesion and to evaluate their relative importance. In the pursuit of such evidence it should be kept in mind that, as in other investigations, any sustained and systematic effort to uncover data will probably be successful, at least in part.

During the past 12 years I have had under continuing observation seven pairs of identical twins, one or both of whom had otosclerosis in the right, left, or both ears. Recently two additional pairs of twins have been observed but as yet have not been sufficiently examined to be included in this discussion. Of these seven pairs of twins with otosclerotic deafness, I found that (1) in one pair (male), only the right ears were severely deafened; (2) in two pairs (female), all had deafness in both ears; (3) in two pairs (female), one twin in each pair had deafness in only one ear; and (4) in two pairs (female), one twin in each pair had no deafness in either ear, at my first examination. In two pairs of these identical twins no certain histories of differences in temperament or emotional sensitivity could be obtained. In both of these the otosclerotic deafness was first admitted at the same age, and both twins in both pairs had been subjected to difficult and frustrating conditions during their childhood and young womanhood for several years before deafness was noted. In five pairs there were definite differences not one death. In dogs, at least, the hypotensive reflex that may be initiated on the right side is seldom elicited. Blood may be taken from the pulmonary veins and passed through the left side of the mechanical heart and back into the aorta by way of the left subclavian artery. The left atrium, the mitral valve, and the left ventricle are then free of blood. This procedure is obviously dependent on a competent aortic valve since, if the aortic valve is not competent, blood will flow back into the ventricle and thence into the atrium. This would prevent exposure of the structures. For that matter, a competent aortic valve is necessary for either the left-sided bypass or the complete heart and lung bypass. Figure 4 illustrates the direction of blood flow in this procedure.

A 50-year-old woman with rheumatic mitral valve disease was operated on by means of the left-sided mechanical bypass. This patient had attacks of rheumatic fever in childhood and known rheumatic mitral valve disease for the past several years. She became increasingly incapacitated. There was a moderate diastolic murmur present at the apex. The heart was regular in rhythm, and the blood pressure was 120/70 mm. Hg. The electrocardiogram showed right axis deviation, with right ventricular hypertrophy. The roentgenogram examination of the thorax revealed enlargement of the right side. Cardiac catheterization showed an increase in the right ventricle pressure to 45/0 mm. Hg. Pulmonary artery pressure was approximately 42-45/8 mm. Hg.

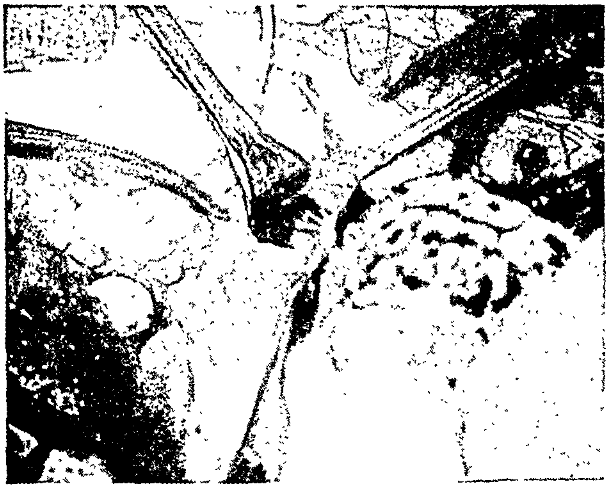
Fig. 5.—Photograph of empty left atrium showing the edge of the mitral valve in a 50-year-old woman with mitral valve disease during bypass of left side of the heart.

The heart was exposed through an anterior transverse thoracic incision in the third intercostal space. The pulmonary veins were cannulated, and blood was taken from this point and passed through the left side of the mechanical heart and back into the aorta by way of the subclavian artery. Clamps were placed on the veins between the cannulas and the atrium. After the mechanical heart took over the function of the left ventricle, the arterial pressure pattern, which was being recorded, showed the usual sign wave of curve indicating that the left ventricle was not ejecting blood into the aorta. The atrium was then collapsed and the appendage was opened; this revealed a dry atrium. The mitral valve could be seen and was enlarged. Figure 5 shows the empty left atrium and also a portion of the mitral valve. The atrium was then sutured, the clamps between the cannula and the atrial wall were removed, and the mechanical heart was gradually shut off. The left ventricle took over its former function, and the arterial pressure pattern was the typical arterial pattern. No particular attempt was made to evacuate the air in the left side of the heart. As the mechanical heart was gradually turned off, some blood flowed into the atrium and into the ventricle and displaced the air upward to the highest point; this was probably aspirated into the mechanical heart and filtered out. At any rate, there has been no evidence of air embolism in our entire group of experimental animals. When the atrium and left ventricle are free of blood, they are only potential cavities and are not distended. This makes the volume of air present in them much less than would be suspected. The cannulas were removed from the pulmonary veins and the incisions in them were sutured with fine silk, reestablishing their continuity. The cannula was then removed from the subclavian artery, and the artery was ligated. The chest wall incision was closed, and two tubes were inserted intercostally for drainage. The patient made a fairly satisfactory recovery, although about 36 hours postoperatively there was some evidence of cardiac failure with some peripheral edema. This responded to medical treatment. It has now been four months since the operation, and the patient is doing well.

In addition to the left-sided bypass in which blood is taken from the pulmonary veins and passed into the aorta, another type of bypass of the left side of the heart has been carried out in which blood is taken from the atrium by cannulating the left superior vein and passed through the mechanical heart and back into the aorta. By this method, all the blood can be diverted from the left side of the heart, although the atrium cannot be opened and the structures in the interior of the heart exposed because the tip of the suction cannula would admit air. With the blood being completely diverted from the left side of the heart, however, prolonged and severe manipulations of the mitral valve have been carried out that were possible only if the systemic circulation was artificially maintained.

By this method, a 40-year-old man was operated on about a year ago. A left-sided bypass was carried out, although the heart was not opened. This patient's case was previously reported.[7] He had mitral regurgitation, and, after the mechanical heart had taken over the function of the left ventricle, a prolonged, blind manipulation of the mitral valve was carried out; this lasted for 17 minutes. During this time, the finger was inserted down through the mitral valve into the ventricle and the chordae tendineae were stretched to allow valve closure. This manipulative procedure is shown in figure 6. During this time, there was no hypotension and no arrhythmias. It is probable that such a severe procedure could not be carried out when the left ventricle is maintaining the systemic circulation. This patient has had great relief of his symptoms. Previous to the operation, the pulmonary capillary pressure was increased to approximately 18 mm. Hg. as determined by cardiac catheterization. Eight months after the operation, cardiac catheterization was repeated and the pulmonary capillary pressure had fallen 7 to 8 mm. Hg, or essentially to normal.

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[7] Dodrill, F. D.; Hill, E., and Gerisch, R. A.: Temporary Mechanical Substitute for Left Ventricle in Man, J. A. M. A. 150:642 (Oct. 18) 1952.

Two other patients with rheumatic mitral disease were operated on in this way. The blood was drawn from the right atrium and passed back into the aorta by way of the subclavian artery. Both of these patients had had arterial emboli. As the left side of the mechanical heart was turned on, soft, congealed blood clots were withdrawn from the atrium and were filtered out in the mechanical heart. Although the mitral commissurotomy in these patients was done blindly, it is probable that had the soft clots not been aspirated from the atrium severe, if not fatal, complications might have ensued.

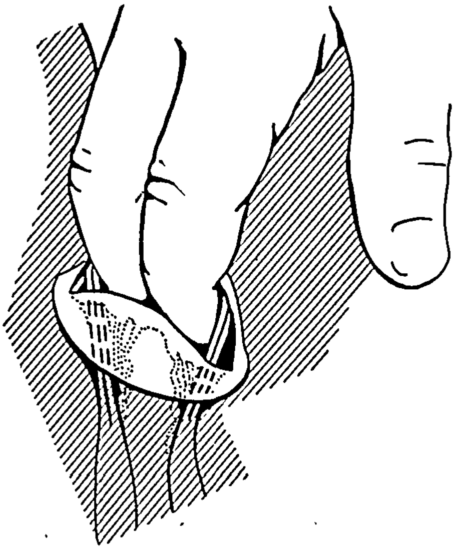

Fig. 6.—Diagram showing procedure for stretching the chordae tendineae in a 40-year-old man with mitral regurgitation.

BYPASS OF BOTH SIDES OF HEART

Both sides of the heart may be bypassed by the mechanism. The two sides of the mechanical heart may be substituted for the two ventricles, while the lungs continue to perform their physiological function. One patient was operated on in whom such a substitution was carried out. This patient was an 18-year-old girl with congenital pulmonary stenosis in whom it was not definitely known whether a ventricular septal defect existed. The patient was markedly disabled; she was profoundly dyspneic on mild exertion. There was great right-sided enlargement of the heart shown by both physical examination and a thoracic roentgenogram. The electrocardiogram showed marked right ventricular enlargement. The pressure in the right ventricle at the time of cardiac catheterization was 178-180/0 mm. Hg. The heart was exposed through a transverse anterior thoracic incision in the third intercostal interspace with transection of the sternum. The right side of the mechanical heart was connected as for a right-sided bypass. The blood was taken from the right atrium and passed back into the artery to the lower lobe. The cannula was pointed centrally to supply the pulmonary circuit. On the left side, the left atrium was cannulated through its appendage, and the blood was put back into the aorta by way of the left subclavian artery. Figure 7 illustrates a bypass of both sides of the heart. The two sides of the mechanical heart were, therefore, simultaneously turned on, and the functions of both ventricles were taken over by the apparatus. The pulmonary valve was then exposed and enlarged under direct vision. Unfortunately, there also existed a profound infundibular stenosis in addition to the valve stenosis that could not be corrected. The mechanical heart completely maintained both sides of the circulation for 35 to 40 minutes while the valvuloplasty was carried out. Unfortunately, this patient died on the fourth postoperative day. Autopsy showed severe atelectasis of the left lung. During the postoperative period, there was evidence of some brain damage that occurred during the procedure because of either anoxia or cerebral embolization. The brain was not examined at the postmortem examination.

COMBINATION OF HYPOTHERMIA AND THE MECHANICAL HEART

Hypothermia in combination with the mechanical heart has considerable advantage. Under hypothermia, the circulation is slowed, the volume of blood being circulated is lessened, the heart rate slows, and the amount of blood being ejected by the coronary sinus is greatly diminished. Since the volume flow is reduced, it is not necessary to use the four major lobes of the lungs for their physiological function. Instead, one, or at the most two, of the lobes is sufficient for the circulating blood volume. This minimizes the amount of cannulation to be done. In the connection of the mechanical heart for a bilateral bypass, the blood flow through one lung is interrupted while the opposite lung maintains the physiological function completely. After one lung has been connected in the circuit, the opposite lung is removed from the circuit by occluding its inflow and outflow. By this means, one lung is used for its physiological function. This seems to be completely adequate, especially under moderate degrees of hypothermia.

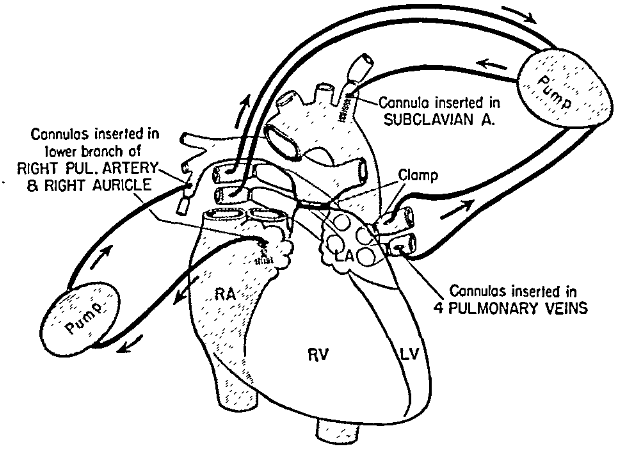

Fig. 7.—Diagram showing method of bypass of both sides of the heart.

COMMENT

Various ways of bypassing the heart need exploration. Of these various types of procedures, none are competitive except possibly the bypass of both ventricles and the complete bypass of the heart and lungs. During the earlier days of work with the mechanical heart, it was felt by some that a unilateral bypass of the heart could not be carried out because the remaining side could not continue to perform its function. Apparently this is not true. It has been definitely shown by both prolonged animal experimentation and the results in living patients that the function of one or the other ventricles may be taken over by mechanical means while the other side and the lungs continue to perform their functions.

It is easier to connect the mechanical heart oxygenator to the anatomic structures than to do a unilateral bypass. With this procedure, blood is taken from the right side and passed through the mechanical heart oxygenator and back into the aorta. This required only two cannulations that are done on the right side. The connection of the mechanical apparatus to the anatomic structures in which the lungs are used for their functions is more difficult from the surgical standpoint. If the lungs can be used for their natural functions, however, it is probably more satisfactory than mechanical oxygenation. All of this work with the mechanical heart is in its infancy. The results demonstrated to date by the various investigators working in this field offer hope that eventually the heart may be bypassed for various types of intracardiac procedures. Blind procedures to correct intracardiac diseased valves represent a great step forward in surgery. Large numbers of patients have been relieved of their symptoms by these methods. It is probable, however, that a much more precise and exact corrective procedure can be performed on these deformed valves, if they can be exposed and the surgery done under direct vision. There is practically no surgical procedure carried out in any part of the body, aside from the heart, that is not under direct vision.

SUMMARY

A discussion of various ways of bypassing of the heart is presented. These consist of a bypass of the right side, the left side, and both sides of the heart, with the lungs for their natural functions, and a bypass of the heart and lungs. Four patients have been successfully operated on by one of these procedures. The pulmonary valve on the right side and the mitral valve on the left side have been successfully exposed and surgically corrected with survival of the patients.

OTOSCLEROSIS IN IDENTICAL TWINS

FACTORS IN ONSET, EXACERBATION, AND STABILIZATION

Edmund Prince Fowler, M.D., New York

In 1947 I published in detail my findings in a study of five pairs of identical twins with otosclerosis.[1] These data will not be repeated here, since the discussion in this paper will concern the etiology of otosclerosis. Heredity looms large in the picture of otosclerosis because it occurs more frequently in some families and generations than in others. However, although heredity is one factor and a very real factor, it is the sole cause neither of otosclerosis nor of any other dyscrasia. More properly it is a predisposition or abnormal sensitiveness to critical internal and external environmental factors that brings it into being. Predisposition and abnormal sensitiveness may be and commonly are inheritable and may operate by way of the soma or psyche or both in parents, in offspring, and in siblings in varying degrees for generations or forever. There is a constitutional "pecularity" or "susceptibility"—terms that in the human connote a more tangible link with certain disease conditions than they do in the lower animals. The clinician may occasionally detect susceptibility even in the absence of disease, and this he must strive to do if preventive treatment is to be of great value. Human heredity must be studied at a different level from genetics in laboratory animals. I failed to find histological otosclerosis in monkeys after they had been subjected to prolonged small and massive doses of the estrogens. In other animals, attempts to produce it by various means have met with failure. No one has produced it in any of the lower animals, probably because there is no heredity predisposition to the disease in any animal but man. In the lower animals, resistance to it seems to be absolute. In human beings, resistance varies; this is evident from records of incidence in siblings of large families with histories of the disease for generations. To what extent the differences in incidence are due to environmental conditions such as diet, endocrine imbalance, stress, shocks or emotional states, or to varying levels of susceptibility is not known. In some families, after decades of genetic distribution, all siblings for one or more generations may show no deafness from otosclerosis.

Identical twins are supposed to be genetically similar because both twins come from the same egg, but I have repeatedly found otosclerosis clinically limited to one twin or clinically severer or appearing some years earlier in one twin than in the other. Moreover, in one or both of a pair of identical twins, as in nontwins, one ear alone may reveal the presence of deafness due to otosclerosis. This occurs in about one-third of the twins I have examined early and also in nontwins. Guild's histopathological data revealed the incidence of otosclerosis (not the deafness) to be unilateral in roughly one-third of his material.[2] This would seem to indicate that, in spite of heredity, one ear escaped or possessed a *partial* resistance to otosclerosis for some time. It does not mean that the bone of the ear that showed no lesion, or the person from whom the skull bone was removed, did not possess through inheritance a susceptibility to otosclerosis in both ears. Nor does it mean that, if death had occurred

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Read before the Section on Laryngology, Otology and Rhinology at the 102nd Annual Meeting of the American Medical Association, New York, June 4, 1953.

[1] Fowler, E. P.: Otosclerosis in Identical Twins: Five Case Histories, Ann. Otol., Rhin. & Laryng. **56**: 368 (June) 1947.

[2] Guild, S. R.: Histologic Otosclerosis, Ann. Otol. Rhin. & Laryng. **53**: 246 (June) 1944.

and the autopsy had been performed a few years later, both ears would not have shown the lesion. Both heredity and environment are frequently slow in their manifestations. It is interesting to note that unilateral otosclerosis was observed oftener in the younger than in the older patients I have examined. The two ears of any person might be considered identical twins, as they both come from the same egg and usually look much alike, and so, both in identical twins and "identical ears," we are provided with an opportunity for studying differences in internal and external environmental factors affecting one or the other or both.

OPPORTUNITIES FOR STUDY

Our knowledge concerning the inheritance of right and left side differences is confused, even our knowledge of the mechanism of right and left handedness. Variations in blood supply, whether anatomic, traumatic, or pathoautonomic, are possible factors in some persons. These factors may differ in any two persons, in fraternal twins, in identical twins, and, generally but not so obviously, in any one person's pair of ears. I call attention to these observations because they suggest several possibilities for research on our problems.

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CLINICAL FINDINGS

In otosclerosis the onset of deafness and its periods of rapid increase appear to coincide in time with, or more commonly subsequent to, puberty, childbearing, the onset of the menopause, severe illness, psychic traumas, and stress and anxiety, all of which are accompanied by major autonomic nervous system readjustments or dislocations. When a careful history is obtained, I have found that there is usually a considerable interval of time between these happenings and the deafness that follows them. I have never observed deafness from otosclerosis occurring after the menopause unless it had been present before then, but I have frequently observed an increase in the deafness following the menopause. The difficulty has been to relate properly such episodes to etiology, activation, and stabilization of the lesion and to evaluate their relative importance. In the pursuit of such evidence it should be kept in mind that, as in other investigations, any sustained and systematic effort to uncover data will probably be successful, at least in part.

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In one pair, the fourth above, who were 19 years old in 1946, one twin had high to average normal hearing in both ears even after the birth of two children (one in 1948 and the second in 1949). After the drafting of her husband and his assignment overseas, her left ear without any inflammatory episodes has during the past three years lost 30 to 40 decibels in the middle frequencies and 45 to 50 decibels in the lower frequencies. These losses still exist. There were marked emotional reactions for many months before I discovered this deafness. The hearing in the right ear remains high normal. Bone conduction remains normal in both ears. The second twin in her early teens was the more emotionally sensitive of the two. In 1946 she had average normal hearing for the middle and higher frequencies and low normal for the lower frequencies in the left ear. Her right ear showed a loss of 25 decibels at 4,000 cps but was within average normal limits for the middle speech frequencies and lower with each octave frequency for the lower tones, showing a loss at 125 cps of 30 decibels. There was a family history of progressive deafness. I made a diagnosis of otosclerosis. The second twin was married in 1952, and a child was born in March, 1953, without any further loss in her hearing in either ear to the seventh month of pregnancy, at which time I last examined her. She had received careful medical care during and subsequent to her pregnancy. In the other four pairs of identical twins, emotional stresses have been followed by varying differences between the twins in their right and left ears, but to avoid confusing the picture I shall omit such details and also those regarding fingerprints, audiograms, roentgenograms, otoscopy data, blood chemistry studies and various somatotype photographs, anthropometric data, blood types, basal metabolic rate, and data on sludging of the blood.

EXAMINATIONS

A word of caution in diagnosis: More than 200 twins were examined in the New York City public, primary, and high schools, and not a single case of deafness due to otosclerosis was detected, even though many of these children were subsequently reexamined by me. It is evident that such deafness in the child is rare indeed, and to diagnose it in children and even in young adolescents is usually impossible or very uncertain. How is it then that so many young patients are referred to me for an opinion on the propriety of having fenestration operations performed? Often parents tell me that the surgeon recommending fenestration has stated that their child has "fulminating otosclerosis," sometimes after but a single examination in cases in which I myself cannot make a diagnosis of otosclerosis but can account for the deafness by some other middle ear impedance lesion. A false or unwarrantedly pessimistic diagnosis may cause emotional repercussions in the patient and be more detrimental to a patient's health and hearing then the presence of the lesion itself.

SUMMARY AND CONCLUSIONS

In support of my belief that emotional factors are involved in the etiology of otosclerosis and in its exacerbation and extension, I submit at this time the following observations. Blood chemistry studies obtained during periods of stabilization seldom showed any impressive variations from the normal. However, a few very low values were observed, and two-thirds of my patients did show low normal values in either the serum calcium or the phosphorus levels. It is possible that these low values may have coincided with some changes in activity in the lesion.

Careful histories revealed that the incidence of otosclerosis was greater in the emotionally sensitive or unstable than in the more emotionally stable of the siblings in families with a history of otosclerosis. In large families I found the incidence of otosclerosis to be greater in the younger than in the middle or older brothers and sisters (especially so in females). In small families of two or three siblings the incidence was found to be greater in the older siblings. The older and the younger siblings are subjected to quite different problems, frustrations, and adjustments than the others. Many nontwins with otosclerosis revealed definite periods of excessive emotion before deafness, but it was difficult to determine the causative role, if any, of these emotional states. Nontwin and fraternal twin siblings differ from one another to a much greater degree, both in inheritance and in environment, than do identical twins.

As is generally known, puberty, childbearing, and the menopause frequently precede, by varying time intervals, the onset or the increase of a deafness caused by otosclerosis, and all are periods of major changes in body metabolism. Important chemical, endocrine, neurovascular, and psychological readjustments occur during these periods. Severe psychic shock from an accident, illness, loss of loved ones, divorce or quarrels of parents, and love affairs cause severer emotional stress and repercussions in the sensitive child than in the more emotionally stable child, adolescent, young adult, and even in the more mature person. Emotional instability or excessive stress can greatly affect both endocrine and chemical metabolism and sludging of the blood; easily detectable neurovascular phenomena such as an increase in the blueness of the sclera, flushing, and psychosomatic disorders commonly accompany these changes.

In the identical twins studied, in every instance but two, the twin in whom deafness due to otosclerosis first developed was the one who prior to the deafness was the more emotional of the two. In two instances otosclerosis developed in both twins at about the same time and both suffered severe emotional stress in their teens. In the otosclerotic patients, in addition to the histories of preclinical emotional instabilities, it was sometimes suspected that the emotional disorders were but one of the factors that might have been capable of precipitating the onset of the lesion or its progression. It is my opinion that emotional instability or endocrine or some other imbalance must be present before there is development or exacerbation of the disease.

140 E. 54th St. (22).

CECOSTOMY AND COLOSTOMY IN ACUTE COLON OBSTRUCTIONS

EXPERIENCES IN NINETY-NINE CASES

Frank J. Rack, M.D.
and
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The relative merits of cecostomy and colostomy as decompressive measures in acute large bowel obstruction have long been debated. During the past decade the management of large bowel lesions has undergone many changes; chemotherapeutic and antibiotic agents are now extensively employed, and single stage procedures with end-to-end anastomoses are considered in most instances the procedures of choice. However, when the lesion has produced complete obstruction, surgical decompression must still precede definitive surgery. Under these circumstances the surgeon is often confronted with the choice between two procedures, cecostomy or colostomy. For this reason it was considered worth while to review our experiences with these measures during the past 13 years at Cleveland City Hospital.

MATERIAL

Between Jan. 1, 1940, and Jan. 1, 1953, 99 patients with acute large bowel obstruction were admitted to City Hospital, Cleveland. During this period there were 161,765 admissions to the hospital and 27,241 admissions to the surgical service. City Hospital cares largely for the indigent residents of the city. The group under consideration not only is in the older age range but also represents a group that is often self-neglecting and is seen at the hospital when disease is further advanced than it is when seen in most private institutions. These patients were treated by different residents under the supervision of senior visiting surgeons. Although there was no routine established for the management of these patients, most patients underwent surgical decompression within 24 hours after admission. Cecostomy was carried out 54 times, colostomy 45 times. On one patient, both procedures were done: cecostomy originally, followed by resection, and colostomy two years later for an obstructive type of recurrence. The average age of the patients was approximately 65 years. The youngest patient was 44 and the oldest 90. Sixty-two per cent were men, and 38% were women. The anatomic distribution of the obstructing lesions in this series is listed in table 1.

All available roentgenograms were reviewed to determine the degree of small bowel distention associated with the acute colon obstruction. Thirty-five patients had no small bowel distention and were therefore considered to have a competent ileocecal valve. Thirty-four patients had a variable amount of small bowel distention ranging from minimal to maximal, suggesting an incompetent ileocecal valve. Vomiting recurring three or more times was recorded as a symptom in 56 patients and was noted as absent in 35 patients. Correlation was attempted between the presence or absence of vomiting and the status of the ileocecal valve as judged by the presence or absence of associated small bowel distention observed on the roentgenogram. Vomiting occurred in 51.4% of the patients with a competent ileocecal valve and in 82.3% of the patients with an incompetent valve. There were 18 (33.3%) deaths among the 54 patients treated with cecostomy and 11 (24.4%) deaths among the 45 patients treated with colostomy. The correlation between the type of anesthesia used and mortality is presented in table 2.

COMMENT

Two important objectives present themselves in the treatment of mechanical obstruction of the intestine: decompression for immediate treatment and elimination of the obstructing mechanism for definitive treatment. When the obstruction is complete, decompression must be given early consideration. To accomplish this most effectively, large bowel obstruction must be carefully distinguished from small bowel obstruction. In the latter, and in the absence of strangulation, "long tube" intubation or formal surgical exploration or both may be properly indicated. In acute large bowel obstruction neither of these measures has a place. It is impossible to adequately decompress large bowel obstruction with long tubes, and manipulation of the distended obstructed colon through a large abdominal incision is dangerous and often fatal. Reliance on such features as the simple scout film and the absence of vomiting to distinguish between these two types of obstruction may be misleading. In our experience, unless the lesion can be palpated in the rectum or seen through the sigmoidoscope, all patients with intestinal obstruction about whom there is a doubt as to the type or point of obstruction should be subjected to emergency barium studies of the rectum and colon. This will prevent dangerous errors in diagnosis and management.

Vomiting associated with intestinal obstruction has been described as a useful differential diagnostic point between large and small bowel obstruction. This was conceived on the basis that regurgitant vomiting develops early in small bowel obstruction and late in large bowel obstruction. Reflex vomiting, however, frequently occurs in large bowel obstruction, and it is difficult to distinguish this type from regurgitant vomiting. In correlating vomiting, competency of ileocecal valve, and mortality of surgical decompression, it is interesting to note that vomiting occurred in 51.4% of the patients with closed loop types of obstruction (probably reflex vomiting) and in 82.3% of the patients with an open ileocecal valve (regurgitant vomiting). However, of the 35 patients who showed no gas in the small intestine by scout film, 11 (31.4%) died

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after decompression, whereas 50% of the patients who showed either minimal or maximal amounts of gas in the small intestine died. These figures suggest that the presence of distention of the small intestine in association with colon obstruction makes the prognosis somewhat poorer and suggests a disease process of some duration. The surgeon is likely to be impressed with the need for early surgical decompression for those patients with colon obstruction with marked dilatation of the cecum, but patients with both large and small bowel distention also need early surgical decompression. The above figures again point out the fallacy of attempting decompression of acute colon obstruction with the long tubes.

Once the diagnosis has been established, and the point of obstruction is found to be proximal to the mid-transverse colon and the cecum is uninvolved, cecostomy is the logical operation. If the cecum itself becomes obstructed, we believe emergency end-to-end anastomosis of mid-ileum to divided transverse colon is the procedure of choice. The distal ileal segment and the proximal portion of the divided transverse colon can then be brought out through stab wounds and right colectomy completed at another operation. If the patient's condition is good, the entire procedure, including resection of the right colon, can be completed as an emergency. If the point of obstruction is found to be in the left transverse colon, splenic flexure or proximal descending colon transverse colostomy may be done as well as cecostomy, but satisfactory resection of lesions in these sites, along with their lymphatic drainage areas, is very difficult, if possible at all, in the presence of a transverse colostomy. Cecostomy is preferable for obstructing lesions in these areas.

TABLE 1.—*Distribution of Acutely Obstructive Lesions and Operative Mortality*

Anatomic Location	No. of Cases	Treated by Cecostomy		Treated by Colostomy	
		Survived	Died	Survived	Died
Hepatic flexure	2	1	1	0	0
Transverse colon	2	2	0	0	0
Splenic flexure	7	5	0	2	0
Ascending colon	1	1	0	0	0
Descending colon	8	5	2	1	0
Sigmoid	42	11	12	16	3
Rectum	25	8	2	10	5
Site unknown	12	3	1	5	3
Totals	99	36 (36.3%)	18 (18.2%)	34 (34.3%)	11 (11.2%)

TABLE 2.—*Type of Anesthesia and Mortality from Cecostomy and Colostomy*

Anesthesia	Cecostomy		Colostomy	
	Living	Dead	Living	Dead
Gas, oxygen, and ether	5	0	2	1
Local infiltration	14	9	11	5
Continuous spinal	1	0	2	1
Continuous spinal and gas, oxygen, and ether	0	1	0	0
Spinal	15	5	15	3
Intercostal block	0	0	1	0
Pentothal and local	1	1	3	1
Local and gas, oxygen, and ether	0	2	0	0
Totals	36	18	34	11

Obstructing lesions in the descending colon, sigmoid, rectosigmoid, and rectum may be decompressed in several ways. If the lesion can be palpated in the rectum or visualized in the sigmoidoscope, a simple expedient is to attempt to pass a heavy catheter past the point of obstruction through the sigmoidoscope. This must be done carefully, lest a perforation be made, but, if the attempt is successful, it allows for decompression and preparation of the patient for definitive surgery without preliminary decompression. If the lesion is impassable or if it lies above the range of the sigmoidoscope either cecostomy or colostomy may be done. Comparative mortality figures for these two procedures reported to date are inconclusive (table 3). Our own series reveals little significant difference in mortality for the two procedures. While making a cecostomy, there is commonly a variable degree of fecal contamination, whereas a colostomy can be performed with comparatively little spill either immediately or several hours after exteriorization. In our series there were seven proved cases of death due to peritonitis following surgical decompression: four after cecostomy and three after colostomy.

TABLE 3.—*Mortality Following Colostomy and Cecostomy*

Authors	Number of Cases		Mortality	
	Cecostomy	Colostomy	Cecostomy	Colostomy
Rankin [2]	16	..	18.7%	......
Gregg and Dixon [3]	81	35	9.7%	14.3%
Wangensteen [4]	..	..	50.0%	......
Collier and Ransom [5]	7	..	71.4%	......
Hendricks and Griffin [6]	142	47	40.5%	21.0%
Michel and McCafferty [7]	37	13	80.0%	15.3%
Albers and Smith [8]	34	34	56.0%	24.0%
Rack and Clement	54	45	33.3%	24.4%

It has been our experience that a cecostomy rather quickly decompresses the colon, but repeated irrigations over several days are required for the colon to function independently and to return feces. The most effective cecostomy in the series of patients reported here is the type done through a McBurney incision in which a Pezzer catheter is placed in the cecum through a stab wound. The colostomies in this series were either of the simple loop variety or of the Wangensteen type.[1]

SUMMARY AND CONCLUSIONS

Cecostomy and colostomy were done 99 times for acute colon obstructions in this series, with a mortality rate of 33.6% for cecostomy and 24.4% for transverse colostomy. Lesions proximal to and in the splenic flexure that produce acute obstruction are best treated with emergency cecostomy. Transverse colostomy in the pres-

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ence of lesions in the splenic flexure makes satisfactory definitive surgery difficult. For obstructing lesions distal to the splenic flexure, adequate decompression may be effective by either cecostomy or transverse colostomy; however, cecostomy has a somewhat higher immediate mortality rate than transverse colostomy. In general, we prefer cecostomy for obstructing lesions of the left colon for the following reasons: 1. With cecostomy the area of bowel most susceptible to perforation is decompressed earliest. 2. The mild bacterial contamination of the peritoneal cavity incident to cecostomy provides immunity for future surgery. 3. Bowel preparation and depression of bacterial flora can be satisfactorily done with a cecostomy. 4. In most instances after definitive surgery the cecostomy usually closes spontaneously and does not require a major surgical procedure for repair as does colostomy. The mortality incident to closure of a temporary colostomy must be considered in evaluating comparative mortality figures for cecostomy and colostomy.

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INTRAPARTUM INITIATION OF LACTATION CONTROL WITH A LONG-ACTING ANDROGEN

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The mammary glands are indeed an integral unit of the female reproductive and sexual system. Were it not for the evolution and development of the function of these structures, it is conceivable that some form of life other than man would dominate this planet. In the female of our species the breasts are erotic centers, and, under certain circumstances, their stimulation may arouse different degrees of sexual excitement as well as induce contractions of the uterine musculature. Most important of all, however, they are the organs that assume the nourishment of the offspring after it emerges from its intrauterine habitat where it was maintained and nurtured through the maternal and placental vascular arrangement. Soon after nidation of the fertilized ovum, preparations are begun so that the breasts may take on their principal function some months hence when the mechanism of lactation is initiated almost simultaneously with the cessation of the mechanism of labor. Thus is provided a continuous means of sustaining each successive generation. The increased estrogens produced by the corpus luteum of pregnancy stimulate the production of a lactiferous duct growth factor or mammotropin of pituitary origin. An alveolar growth mammotropin is also formed from the same source through the combined stimulation of estrogens and progestin.[1] From an early stage of pregnancy, then, the ovarian hormones in cooperation with the pituitary gland bring about full development and priming of the breasts during the first 120 days. Thereafter they remain in relative status quo until the termination of pregnancy.

The activation of lactation occurs when the anterior pituitary lactogenic hormone, called galactin or prolactin, is released after restraint by the ovarian and placental estrogens throughout pregnancy. Upon the termination of the third stage of labor and the consequent rapid decline of the estrogen blood level during the first eight postpartum hours,[2] prolactin is increased and liberated, and within three to five days milk is secreted by the breasts. This interrelationship of the hypophysial gland and lactation was first observed in 1921 by Evans and Long.[3] Subsequently Selye, Collip, and Thomson,[4] Gomez and Turner,[5] and Riddle [6] demonstrated the control of lactation by the pituitary gland. The nervous stimulation of sucking and the removal of the milk are also essential to its sustained production, and, if the breast is not suckled postpartum, suppression of lactation eventually occurs in spite of the copious fount of lactogenic hormone. Extraordinary instances of the establishment of lactation in nonpregnant women simply by sucking of the nipples have been quoted by Greenblatt.[7]

The decision that a newborn infant is not to suckle but is to receive artificial nursing instead is just as often dictated by the will of the mother as it is by the judgment of the attending physician. Some women are decidedly unwilling to suckle their infants for reasons that may be imperspicuous or, on the other hand, for reasons that are understandable and apparent. It is our opinion that mothers who refuse to nurse their babies should not be urged to change their attitudes except for some extraordinary reason. However, there are cogent reasons why the newborn baby may not be put to his mother's breasts. Such disorders as deformed or chronically sore or fissured nipples, or abscess during a previous pregnancy, preclude nursing. Some maternal systemic and weakening diseases such as tuberculosis, myasthenia gravis, a malignant condition, or certain anemias and psychoses may contraindicate nursing. There are also instances when nursing would be most welcomed and natural, but where lactation must be suppressed because of the prenatal or perinatal loss of the baby.

Lactation usually produces engorgement of the breasts on the third, fourth, or fifth day of the puerperium, and, when the full mammary glands are not relieved by emptying, they become tense and swollen, heavy and tender. The painful turgescence persists from 48 to 72

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Testosterone cyclopentylpropionate in cotton seed oil was made available for this clinical study and evaluation by Dr. H. F. Hailman of the Upjohn Company, Kalamazoo, Mich.

hours. Usually it is the cause of considerable discomfort and distress to the patient, and, if proper attention is not given, acute inflammation and subsequent abscess formation may ensue.[8] As early as 1926 Parkes and Bellerby [9] demonstrated the inhibitor effect of estrogen on the established lactation of mice. Since that time, many other investigators [10] have confirmed these observations and have made similar deductions from their work with other animals. Before 1938, when postpartum lactation was not desired, the patient was restricted in her fluid consumption, and the local application of ice, saline purgatives, intramuscular injections of camphor in oil, and the administration of analgesics were often used to provide a measure of relief.

In 1938 Foss and Phillips [11] suggested the use of estrogen to inhibit lactation in women, and it has been widely adopted in various forms and doses during the last 15 years.[12] Repeated administration of the hormone is required during the puerperium, but its discontinuance within a few days usually causes the appearance of congestion of the breasts, thus merely delaying the symptoms rather than avoiding or minimizing them. Also, discontinuance of the estrogen therapy is usually followed by excessive uterine (withdrawal) bleeding, and nausea may be an unpleasant side-effect. In a recent clinical experiment by Kosar, Nash, and Buxton,[13] dienestrol was found to have had a lesser inhibiting effect on lactation than simple symptomatic therapy. The androgens like estrogen will also suppress lactation. In 1937 Robson[14] was able to stop lactation in the nursing mouse by the injection of 0.1 mg. of testosterone propionate. The next year Kurzrock and O'Connell [15] used the same preparation to arrest lactation in some of their patients. They used from 50 to 100 mg. in divided doses of 10 to 25 mg. each, beginning on the third postpartum day. We and others [16] have also successfully used divided doses of testosterone propionate given parenterally, and androgen-estrogen combinations have been used parenterally by Katzman [17] to prevent pain and lactation during the puerperium. All of these methods, however, require repeated injections.

More recently, and until October, 1952, we have used methyltestosterone, prepared for buccal absorption, to suppress lactation. Our patients were given five 10 mg. tablets on the second postpartum day, and they were asked to place one under the tongue every two hours until all five had been used. The procedure was repeated the next day. Some patients found them objectionable, but the results by this method were satisfactory. The congestion of the breasts lasted from 24 to 48 hours, but occasionally longer. The mastalgia was reduced to a tolerable degree. The wearing of a breastbinder, the application of ice, and the oral administration of codeine sulfate combined with acetylsalicylic acid gave additional relief. There were no instances of subsequent filling of the breasts after they had become decongested, and there was no withdrawal bleeding. The administration of methyltestosterone sublingually was superior to the oral administration of diethylstilbestrol for the purpose for which it was employed, but repeated and frequent administrations were also necessary.

In October, 1952, we decided that it might be possible to initiate the control of lactation before delivery, since, at the time of admission to the hospital of certain patients who were in labor, we or they knew that they were not going to nurse their babies. Thus could be bridged the important time lag between the termination of pregnancy with its consequent sudden and rapid removal of the chorionic source of the lactation inhibitor, and the usual 48th postpartum hour, when the first dose of the inhibiting medication is usually administered. During this important period the lactogenic hormone is being rapidly increased in the anterior pituitary gland and liberated. It appeared to us, too, that an injection during labor of an optimum dose of a long-acting androgen such as testosterone cyclopentylpropionate in cottonseed oil might produce and maintain a lactogenic-inhibitory-hormone level in the blood stream, which would obviate the necessity of repeated administrations and which might appear in the blood stream before the liberation of lactogen. The cyclopentylpropionic acid ester of testosterone was found by Ott [18] and his associates to have had a period and degree of effectiveness that was markedly in excess of that of testosterone propionate. Lloyd and Fredericks [19] reasoned from their studies with the same androgen in oil that the lesser effectiveness of testosterone propionate was probably due to its production of such a rapid rise and fall in the circulating steriod level that it could not be efficiently utilized by the patient. The ester of testosterone cyclopentylpropionate is inactivated at a slower rate, which permits more economic utilization, and the steady effective level so produced is maintained for a greater period.[20]

There were 125 patients in this study, 49 of whom were private patients of two of us (S. M. D. and J. M. F.); and, of the rest, some were staff patients but the majority were private patients of other members [21] of the attending and courtesy staffs of the department of obstetrics and gynecology of George Washington University Hospital, who cooperated in this study and gave us the benefit of their own observations and impressions and their patients' reactions. Nearly all of the patients included in this experiment had answered "no" on their admission in labor, when interrogated as to whether they expected to nurse their babies, or it was known that there would be no need to allow lactation. One hundred of them were given 100 mg. of testosterone cyclopentylpropionate (Depo-testosterone) intramuscularly when labor was definitely established. This usually corresponded with the time that the first dose of obstetric analgesia was administered, and averaged five hours before delivery. Twenty-five of the patients received the preparation after delivery, at some time during the first eight postpartum hours as an average.

Daily recorded observations were made on each patient by two of us (P. A. S. and H. L. M.). Notes were kept concerning the degree and duration of breast engorgement, if any, no matter how slight, and of the maximum number of hours of real discomfort that each patient experienced while she was in the hospital. Subsequent inquiries were made of the attending physicians concerning any breast complications that may have arisen while their patients were convalescing in their own homes. We were also interested in knowing what each patient required to support her breasts—her own brassière or a hospital breastbinder. Any patient who had had a previous experience with the suppression of lactation was asked to compare that experience with her present one, and her comments were summarized. We consider the number of hours of pain or discomfort from fulness of the breasts as a satisfactory index of the value of our therapy, since uninhibited lactation will usually cause the breasts to be painful and turgid for several days unless the milk is removed or until failure to empty them produces stasis and ultimate involution. In cases in which the discomfort persisted for longer than 24 hours the result was not to be considered satisfactory.

One hundred thirteen, or 90.4%, of the 125 patients in this group did not complain of any discomfort in their breasts for more than 24 hours, although swelling occurred in all except 5 cases. Forty-one did not complain at all, and 72 reported discomfort for less than 24 hours. Only 12 patients could be classified as not having been helped, since they were uncomfortable for more than 24 hours. One hundred eleven patients were able to wear their own brassières during the entire postpartum period, which in itself is an additional indication of the minimal swelling permitted by the action of the preparation that we studied. Hospital breastbinders were required for the other 14 patients. No limit was placed on either the amount or the nature of the patients' fluid intake.

There were no incidents of delayed breast congestion in any of the entire group after the initial engorgement and stasis had subsided, and there were no cases of mastitis. Each of six patients, after returning to her home, reported that there had been one day when milk was secreted by her breasts, but in each case it was unassociated with any swelling or discomfort, and no treatment or special care was required. One patient reported the appearance of milk for six weeks. Six other patients lactated in the hospital for periods of less than 48 hours. In one patient a noninflammatory lactocele developed that was somewhat painful but that absorbed spontaneously. From the 42 women who were able to compare the effects of testosterone cyclopentylpropionate with other methods of lactation control, the favorable opinion of 36 was "better" or "much better," while the remaining 6 felt there was little difference.

We observed that there was a decided absence of the uncontrollable passing depression that some women experience sometime during the first week of the lying-in period and that has been referred to by the colloquialism, "fifth day blues." The favorable protein anabolic action attributed to androgens was probably responsible. The single 100 mg. dose of androgenic hormone such as we used was too small to have any masculinizing effects on the adults of this series, and the preparation that we used did not cause any local irritation or unpleasant systemic reactions.

SUMMARY AND CONCLUSIONS

Our experiment reveals that a single injection of 100 mg. of testosterone cyclopentylpropionate in cottonseed oil (Depo-testosterone) given intramuscularly during the intrapartum or early postpartum period is an altogether sufficient and satisfactory method to adopt for the control of lactation and to minimize the degree and duration of the pain caused by puerperal breast engorgement in nonnursing mothers. The results are better than heretofore obtained by the repeated administrations of estrogen and other forms of androgen, and the single dose method is more acceptable to the patients.

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BODY TEMPERATURE STUDIES IN ANESTHETIZED MAN

EFFECT OF ENVIRONMENTAL TEMPERATURE, HUMIDITY, AND ANESTHESIA SYSTEM

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The possibility of great harm occurring as a sequel to marked elevations of body temperature is well known. Heat retention (also called heat stroke or heat pyrexia) may be associated with convulsions, coma, and psychic disturbances in the recovery phase.[1] In fatal cases, generalized degeneration of the neurons of the central nervous system, centrolobular liver necrosis, lower nephron nephrosis, and widespread hemorrhages, especially in the lungs and subendocardial tissues, are found.[2] The similarity of the pathological lesions found in patients dying following fever therapy and those produced by anoxia from any cause has been stressed by Hartman [3]; hypoxia occurs at the tissue level because of increased metabolic oxygen demand associated with fever, which cannot be met by the cardiorespiratory transport system.

It has been suggested that liver cells in addition to the cells of the central nervous system are particularly susceptible to damage during high fever.[4] Jaundice is a well-recognized complication of fever therapy, and several deaths have occurred following such treatment in which extensive liver necrosis was found at autopsy. Lesser elevations of fever produce apparently reversible impairment of liver function.

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In addition, hyperthermia imposes a severe stress on the cardiovascular system. Heating the entire skin area may lower the over-all peripheral resistance to two-thirds or half of normal, according to Bazett.[5] In order for an effective general circulation to be maintained, the cardiac output increases and splanchnic vasoconstriction occurs.[6] These cardiovascular responses to heat decrease the ability of the body to withstand further circulatory stress. Experimentally, exposure to a hot environment sufficient to cause a rise in body temperature decreases the ability of animals to survive hemorrhagic shock,[7] traumatic shock,[8] and shock secondary to thermal burns.[9] External thermal stress adversely affects the circulatory status of patients in congestive heart failure, as has been shown by Berenson and Burch; in normal subjects circulatory responses to positional change are impaired.

This clinic has been particularly aware of the serious nature of the problem of heat disorders during anesthesia for many years because of high temperatures and humidity in the operating rooms during several months of the year. Despite vigilance, in the past two years alone two children and one adult have had convulsions associated with hyperpyrexia while anesthetized. Certain similarities were notable in all of these cases. All occurred during the summer months, with the temperature of the operating room near 90 F and the relative humidity high. All three patients were acutely ill, having had peritonitis for 36 hours or longer before surgical intervention. The cause of the peritonitis was a perforated appendix in two cases, and was due to leakage from the duodenal stump following subtotal gastrectomy in the third. In every case, convulsions were preceded by a rapid, progressive rise in body temperature. Fortunately, prompt treatment directed toward controlling the convulsions, rapidly reducing the fever, and providing maximal oxygenation averted a fatal outcome in each instance.

TABLE 1.—*Age and Sex Distribution, Anesthetic Agents Used, and Duration of Anesthesia in Heat Study Cases*

	Type of Anesthesia System			
	To-and-Fro	Circle	Non-Rebreathing	Total
No. of Cases	67	54	43	164
Ratio of Males:Females	39:28	32:22	29:14	100:64
Age, Yr.				
12-20	4	..	7	11
21-40	10	13	9	32
41-60	26	20	9	55
61-70	21	14	11	46
Over 70	6	7	7	20
Anesthetic Agent				
Cyclopropane	58	41	..	..
Ether	9	13	..	..
Nitrous oxide-oxygen-thiopental	..	..	39	..
Nitrous oxide-oxygen-trichlorethylene	..	..	3	..
Nitrous oxide-oxygen-ether	..	..	1	..
Duration of Anesthesia				
Mean	3 hr. 57 min.	4 hr. 8 min.	4 hr. 34 min.	4 hr. 13 min.

The dangers of hyperthemia following anesthesia in children have recently been emphasized by Bigler and McQuiston.[10] Two deaths in infants attributable to this cause were reported. Knight[11] observed rises as high as 5 to 7 degrees F in body temperature following operations performed in the summer. These temperature rises appeared to be associated with elevated room temperature, prolonged surgery, heavy draping, and the use of the carbon dioxide absorption system. Burstein and Mark,[12] as well as Knight, have advocated cooling the inspired gases when to-and-fro or circle absorption systems are used in hot weather. The observations of rectal temperature during anesthesia made by Searles and Lenahan[13] show in a general way the effects of environmental conditions on body temperature.

No systematic study has been made to show the behavior of body temperature in the anesthetized subject under various conditions of room temperature and humidity. It would be desirable to know the critical temperature and humidity conditions above which heat retention becomes a frequent complication. Moreover, no clear relationship has been demonstrated between body temperature changes and choice of anesthesia system. The present study was undertaken to provide more definite information about these matters that might be of value to the anesthesiologist and surgeon.

CLINICAL MATERIAL AND METHODS

Temperature measurements were made in 212 general hospital patients undergoing surgery and general anesthesia. The records of 164 of these patients were selected for a study relating body temperature changes with environmental temperature, humidity, and choice of anesthesia system. The criteria used in selecting these cases were as follows: Only cases in which surgical procedures lasted more than two hours were used. The subjects were patients weighing more than 90 lb. (40.9 kg.) who had no fever before operation and who showed no evidence of shock during the procedure.

The duration of anesthesia varied from two to nine and one-half hours; the average for all cases was slightly over four hours. The age of the subjects ranged from 13 to 85 years. Age and sex distribution are presented in table 1.

Small children were excluded because their smaller body mass and different physiological responses to heat render them unsuitable for comparison with adult subjects. Patients with fever were excluded from the study because it was assumed that they might differ from afebrile subjects in their responses to thermal stress. Rectal temperature was used as a measure of internal body temperature in 150 cases; gastric temperature was used in 9 cases; and low esophageal temperature was used in 5 cases. The mean body temperature for all subjects at the beginning of anesthesia was 99.2 F. The variation was from 97.0 to 100.8 F; however, less than 4% of cases fell outside of the range 98.0 to 100.2 F.

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Patients in whom signs of hemorrhagic or traumatic shock developed during the course of the operation were not included in the study. Body temperature was regularly observed to fall after the onset of shock in these cases, and their inclusion was not considered permissible.

All patients except six received preanesthetic medication within 90 minutes of induction of anesthesia. Of these, all received a therapeutic dose of a belladonna drug, which in over 93% of cases consisted of 0.4 mg. of atropine. Meperidine was given to 52% of the patients in addition, and 35% received morphine.

Inhalation anesthesia, administered by endotracheal technique, was used in all cases. Three different anesthesia systems were used: to-and-fro absorption, circle absorption, and non-rebreathing technique. The first two mentioned were employed in a closed system in all cases in this series. The Stephen-Slater valve,[14] which permits no rebreathing of exhaled gases, was used in the third group.

The anesthetic agent employed with the to-and-fro and circle systems was either cyclopropane or diethyl ether. Cyclopropane was used approximately four times more frequently than ether, with both the to-and-fro and the circle systems. More than 90% of the patients anesthetized with the non-rebreathing technique received nitrous oxide and oxygen supplemented with sodium thiopental. In the remaining cases either trichlorethylene or ether was the supplement (table 1). Flows of 6 to 12 liters per minute of nitrous oxide-oxygen were required; concentrations of nitrous oxide above 75% were not employed.

This study was conducted during the course of one calendar year. Thus it was possible to assess the responses of anesthetized patients to a graded series of thermal stresses related to seasonal changes. The operating suite in which the study was made is not air-conditioned. Instruments are sterilized by boiling in a room that opens directly upon two adjacent operating rooms. This arrangement results in considerable humidification of the room air. The overhead operating lights in use utilize four 250 watt incandescent lamps. The sterile draping system in practice in this hospital was used consistently throughout the study: four small doubled sheets ("clinics") were placed on the four sides of the field; one sheet, folded in half, was then placed respectively across the foot and one across the head of the table; finally, a laparotomy sheet was placed on top of these drapes.

The wet and dry bulb temperature of the room air was measured to within 0.5 degrees F with a sling psychrometer. Measurements were made at approximately 90 minute intervals during the procedure. The relative humidity was computed from psychrometric tables.

Body temperature, and temperature within the anesthesia system and the airway, was measured with a Micromax 6 point recording thermocouple (manufactured by the Leeds and Northrup Co., Philadelphia). Copper and constantan wire thermocouples were used. The accuracy of this machine is ± 0.3 degrees F. A United States Bureau of Standards calibrated mercury thermometer was used to check the performance of the machine, and during many of the measurements, one thermocouple was kept in an ice bath as a reference point. The latter was desirable, although not essential, inasmuch as the machine utilizes a self-contained, known electromotive force instead of a cold junction as a basis for comparison with the electromotive force produced by the test thermocouple.

Temperature was recorded between points at one minute intervals; hence, the time between successive readings on any one thermocouple was six minutes. The rectal thermocouple, mounted in a plastic rod, was inserted 4 or more inches into the rectum at the earliest possible moment after anesthesia was established. Gastric or esophageal temperatures were obtained with a thermocouple mounted in a length of vinyl plastic tubing (2.5 mm. external diameter), which had been stiffened by treatment with heat. Fine, unsheathed, insulated thermocouple wires were used to obtain temperatures in the airway and in anesthesia equipment. Low tracheal or carinal temperature was obtained by inserting such a wire a measured distance beyond the tip of the endotracheal airway, usually 3 to 4 cm. Temperature in the to-and-fro cannister was measured in the proximal one-third of the cannister. Measurements were made at several locations in the circle cannister, through holes drilled in the side; only measurements made in the proximal one-third are described herein. Temperatures were measured in the accordion tubes of the circle machine. Two thermocouples were placed in the inspiratory tube, one 4 in. from the Y piece and the other adjacent to the machine; two other thermocouples were similarly placed in the expiratory tube. The accordion tubes used were 31 in. (77.5 cm.) long. The temperature under the drapes adjoining the chest, the flank, the hip, and between the thighs was measured. Thermocouples were placed about 3 cm. from the body and were protected from moisture.

The mean temperature was computed from a series of observations in a number of patients, six minutes apart over a period of two or more hours. Two to-and-fro, or two circle cannisters were alternated at hourly intervals, and were not cooled. Data upon which mean cannister temperature was based were only those observed when the patient was breathing through the test cannister, not during the cooling period of the cannister.

RESULTS

The effects of room temperature, humidity, and anesthesia system on body temperature were analyzed in the following way. Body temperature change, whether a rise or a fall from the initial recorded internal temperature, was plotted against the duration of anesthesia in hours. The body temperature records were then grouped in two general ways, according to environmental conditions: first, by the dry-bulb temperature of the operating room (in 5 degree F ranges), and each range divided in two subgroups according to whether the relative humidity was above or below an arbitrary figure of 55%; second, solely by the wet-bulb temperature of the room. The distribution of patients by these two methods is shown in tables 2 and 3 respectively.

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Figures 1 and 2 show the manner in which the data for each temperature range were plotted; some 30 other charts cannot be shown because of limitations of space. Each dot on the scatter chart represents the body temperature of one patient at the time shown; the average temperature change is shown by a curve. Temperature measurements were actually made at 6 minute intervals; however, in the interests of clarity, the interval shown on the charts is 18 minutes.

TABLE 2.—*Distribution of Heat Study Cases According to Dry-Bulb Temperature Range (F), Relative Humidity, and Anesthesia System*

	Type of Anesthesia System			
	To-and-Fro	Circle	Non-Rebreathing	
Relative Humidity Below 55%				
75-79.5	6	12	4	
80-84.5	18	21	17	
85-89.5	12	7	8	
90-95	7	3	3	
Relative Humidity Above 55%				
80-84.5	5	5	5	
85-89.5	16	6	3	
90-95	3	..	3	
Totals	67	54	43	Grand Total 164

TABLE 3.—*Distribution of Heat Study Cases According to Wet-Bulb Temperature Range and Anesthesia System*

	Type of Anesthesia System			
	To-and-Fro	Circle	Non-Rebreathing	
Wet-Bulb Temperature, F				
58-64.5	8	17	11	
65-69.5	15	19	11	
70-74.5	19	8	11	
75-82	25	10	10	
Total	67	54	43	Grand Total 164

One fact immediately apparent is the wide variability of rate and degree of body temperature rise shown by different patients. The slope of the temperature curve for any particular patient is apt to be bumpy and irregular, apparently related to the variable degree and intermittent character of sweating seen in these subjects. A definite trend in the course of the body temperature is usually discernible however.

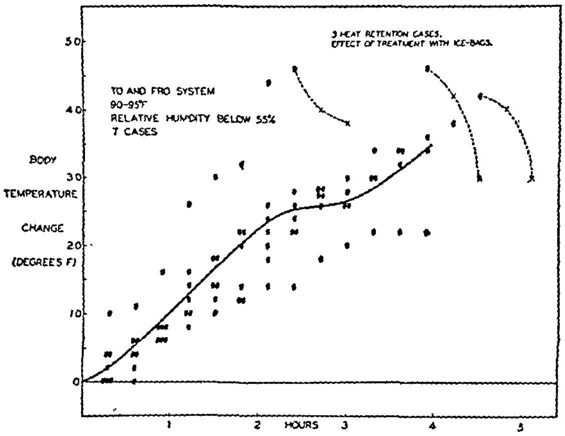

Fig. 1.—Body temperature changes during anesthesia in seven cases with the temperature of the operating room ranging from 90 to 95 F.

In figure 1, at a dry-bulb temperature of 90 to 95 F with the relative humidity below 55%, three out of seven patients anesthetized with the to-and-fro system had heat retention requiring therapy with ice-bags. This occurred after 2.5 hours, 4 hours, and 4.5 hours of anesthesia. Significantly, the average wet-bulb temperature for the seven cases was 76.5 F. Only part of the cooling curve of the treated patients is shown; however, the effectiveness of therapy can be clearly seen.

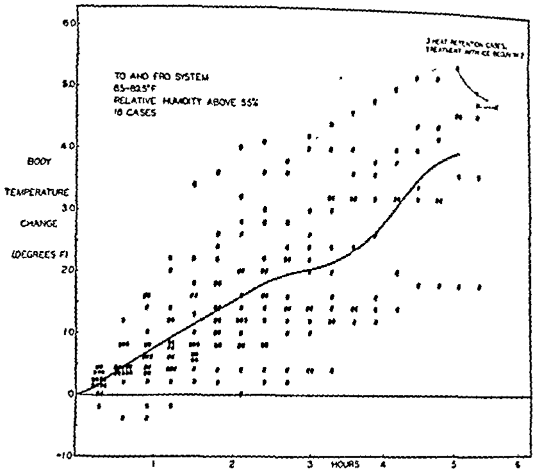

Fig. 2.—Body temperature changes during anesthesia in 16 cases with the temperature of the operating room ranging from 85 to 89.5 F.

At 80 to 84.5 F, with the relative humidity above 55%, two of five patients anesthetized with the to-and-fro system were on the verge of heat retention after 3.5 hours (not shown). The average wet-bulb temperature was 74 F. Heat retention was averted in one patient by the application of ice-bags, and in the other when severe hemorrhagic shock supervened.

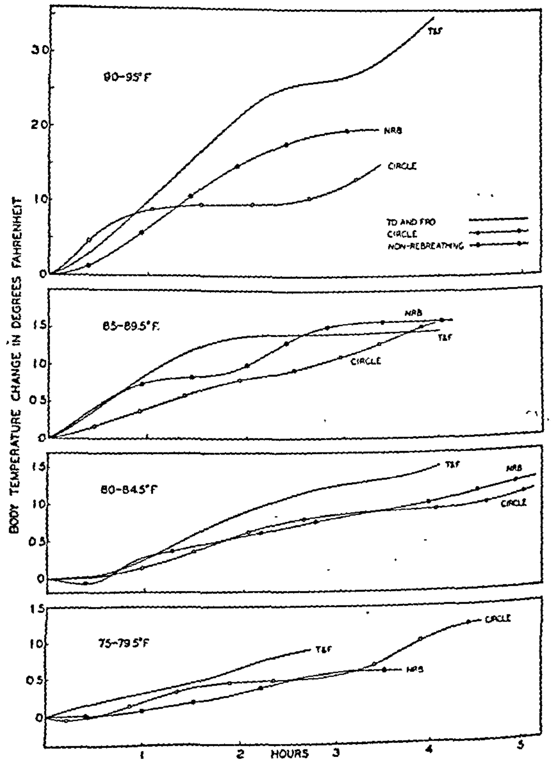

Fig. 3.—Average body temperature curves during anesthesia with the operating room temperature at various ranges but the relative humidity always below 55%.

Heat retention occurred in 3 out of 16 patients in whom to-and-fro absorption was used at 85 to 89.5 F, with the relative humidity above 55% (fig. 2). The average body temperature rise for the group as a whole was over 4 degrees F in five hours. The average wet-bulb temperature was 77.5 F.

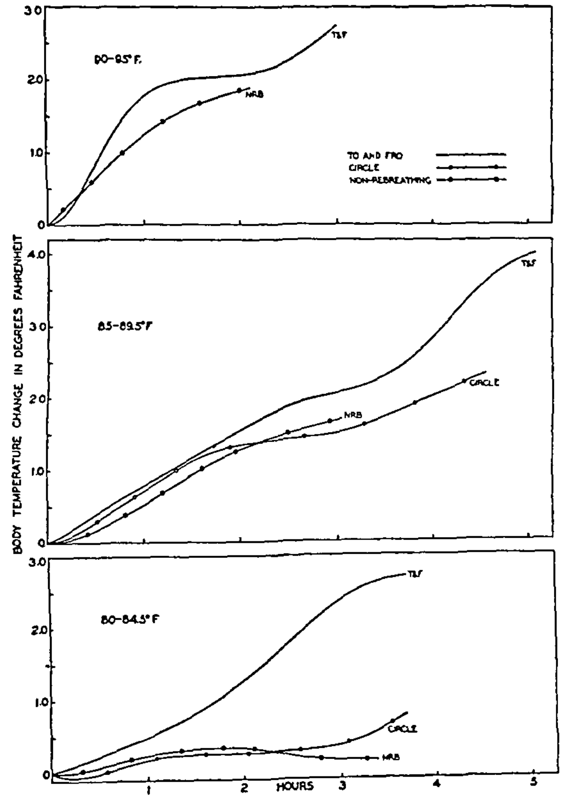

Fig. 4.—Average body temperature curves during anesthesia with the operating room temperature at various ranges but the relative humidity always above 55%.

At 90 to 95 F with the relative humidity above 55%, the body temperature rose at a rate of over 1 degree F per hour in three patients anesthetized with the to-and-fro system (not shown). The average wet-bulb temperature was 81 F. Heat retention developed in only one patient, but in both of the other two it was imminent at the time surgery was terminated. Under comparable conditions, heat retention developed in only one patient anesthetized with the circle or non-rebreathing system.

The average body temperature curves for the data grouped by dry-bulb temperature range, with the relative humidity below and above 55%, are summarized in figures 3 and 4.

Average body temperature curves plotted solely in relation to the wet-bulb temperature are shown in figure 5. From the statistical standpoint and for reasons that will be discussed, this figure is the one best suited for comparing the heating effects of the three anesthesia systems.

At wet-bulb temperatures below 75 F, the height and rate of body temperature rise were slightly but consistently greater in patients anesthetized with the to-and-fro system than when the circle and non-rebreathing systems were used. Above 75 F, this effect was considerably more marked. The rate and height of body temperature rise was similar with both the circle and non-rebreathing systems, although it was sometimes slightly higher with the latter.

The results of air temperature measurements under the drapes, adjoining the subject's body, are shown in table 4. The temperature between the interradiating surfaces of the thighs approached body temperature closely; only measurements made adjacent to the chest, flank, and hip are included in the results shown in the table. The air temperature under the drapes was 8 to 10 degrees warmer than room air when the latter was 80 to 90 F. Above a room temperature of 90 F, the temperature under the drapes approached body temperatures. The results of temperature measurements made in the airway, and in various locations in the three anesthesia systems studied, are shown in tables 5 and 6. Attention is called to the variation in temperature observed. The manner in which average temperature was computed has been described. The average temperature relationships within the three systems are summarized in figure 6.

TABLE 4.—*Average Air Temperature Observed Under Surgical Drapes*

Room Temperature, F	Under Drapes, F	No. of Patients	No. of Measurements
75-79.5	89	22	586
80-84.5	93	30	1,194
85-89.5	96	11	419
90-95	98	13	309

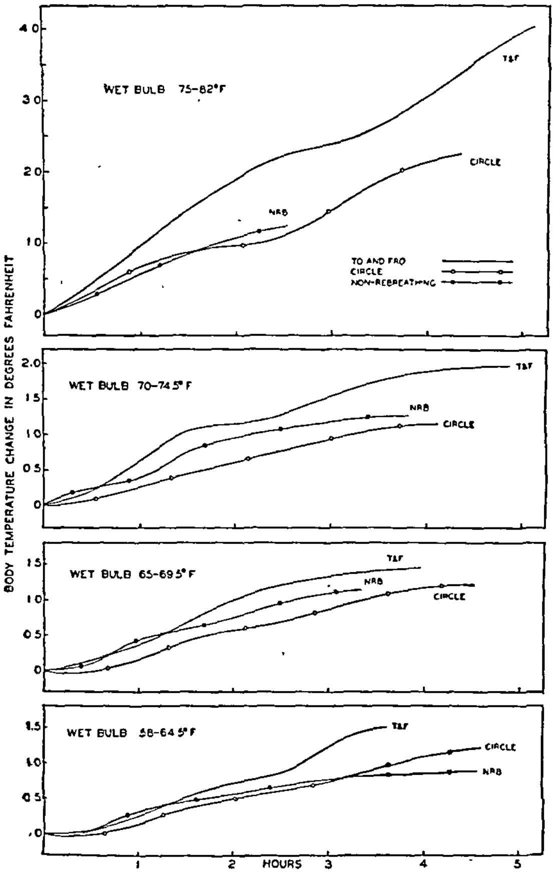

Fig. 5.—Body temperature changes with different anesthesia systems at various wet-bulb temperatures of the operating room.

COMMENT

Some of the undesirable effects that may result from heat retention have been mentioned. This type of heat disorder arises from a disturbance of the normal balance between heat gain to the body and heat loss.

The principal source of heat gain is internal heat production from the combustion of carbohydrate, protein, and fat, and to a minor degree from the specific dynamic action of protein. In addition, fever per se increases metabolic heat production by about 7% per degree Fahrenheit. Surgical patients may also gain heat from sources outside the body by radiation and conduction. Examples are the radiant heating effects of the operating lights and the warm bodies of the surgeons on the one hand, and heat gain from warm objects such as repeatedly applied hot laparotomy pads on the other.

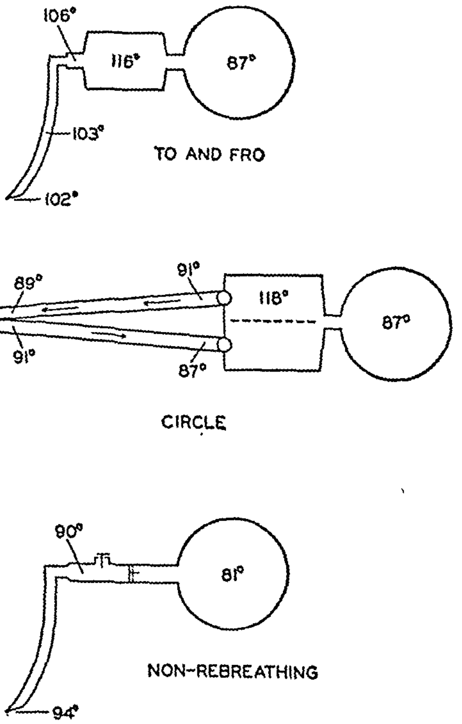

Fig. 6.—Average temperature (Fahrenheit) at various points in the to-and-fro, circle, and non-rebreathing anesthesia systems.

For thermal equilibrium to exist, the summation of factors resulting in heat gain must be balanced by an equal loss of heat by the body. The significance of a rising body temperature during anesthesia is a disparity between these two factors. Heat loss is mediated solely by four physicial processes: radiation, convection, conduction, and evaporation.

Heat loss by radiation is influenced chiefly by two factors: first, the difference in surface temperature of the subject and the objects surrounding him and, second, the effective radiating surface area. This area is always less than the total body area because of interradiating effects. Radiation is the principal means of body heat loss at comfortable room temperatures. However, its importance decreases rapidly above 89 F, and radiation loss becomes zero when air temperature equals skin temperature.[15]

Conduction is not ordinarily an important means of heat loss. However, when large areas of the body are in contact with solid objects, conduction assumes greater importance. The use of a water-cooled mattress[10] or ice-bags are examples of the effective application of conductive heat loss. The former has the advantage of making use of a large portion of the body area that would not otherwise be available for cooling the body. Under operating room conditions, the methods that we have found most effective in treating pyrexia are those that utilize conduction.

Heat loss by convection is that heat lost by warming of the air that comes in contact with the body. Loss from natural convection is always small; however, forced convection is much more effective. Heat loss by the latter is proportional to the square root of the air velocity.[16] Surgical draping impedes convection. Moreover, the promotion of air currents in operating rooms by fans is not generally approved. As a consequence, forced convection as a means of heat dissipation is frequently unavailable to the surgical patient.

TABLE 5.—*Average Fahrenheit Temperatures in Various Locations in To-and-Fro, Circle, and Non-Rebreathing Anesthetic Systems*

	Location				
	Bag	Canister	Adaptor	Mid-Tube	Low Trachea
To-and-Fro System					
No. of measurements...	175	251	996	483	1,268
No. of cases............	7	22	33	13	87
Variation, F	80.0-96.2	80.4-141.8	93.0-122.8	97.4-111.0	98.2-108.0
Mean temperature, F...	86.6	116.2	105.8	103.1	101.8
Circle System					
No. of measurements...	189	57	943	128	1,479
No. of cases............	7	3	27	4	41
Variation, F	80.8-96.0	75.2-137.2	86.2-99.8	95.6-100.4	93.6-101.2
Mean temperature, F...	86.9	117.5	91.7	97.9	96.9
Non-Rebreathing System					
No. of measurements...	175	...	604	...	500
No. of cases............	5	...	16	...	16
Variation, F	75.0-88.0	...	84.2-94.6	...	90.0-99.4
Mean temperature, F...	81.1	...	89.7	...	94.1

TABLE 6.—*Temperature Within the Accordion Tubing in the Circle System*

	Inspiratory Tubing		Expiratory Tubing	
	Adjoining Machine	Adjoining Y Piece	Adjoining Machine	Adjoining Y Piece
No. of measurements.....	159	159	39	39
No. of cases..............	6	6	2	2
Mean temperature, F.....	90.8	89.4	87.0	91.2

At comfortable room temperature (68 to 70 F), evaporation plays a minor role in body heat elimination; above 88 to 90 F, however, it is the principal means, and above 94 F it is the sole means by which body heat can be lost.[15] It can be seen from table 4 that above a room temperature of 85 F, the temperature under the surgical drapes is 96 F or more. Hence, above this room temperature, it is clear that in any patient in whom the sweating mechanism fails heat retention will almost certainly develop. It is our opinion that the lightest possible draping should be used during hot weather. Asepsis is actually maintained more satisfactorily with a light drape, for the patient is less likely to sweat through and contaminate it.

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15. Hardy, J. D.; Milhorat, A. T., and DuBois, E. F.: Basal Metabolism and Heat Loss of Young Women at Temperatures from 22° C. to 35° C., J. Nutrition 21:383, 1941.

16. Maehle, W., and Hatch, T. F.: Heat; Man's Exchanges and Physiological Responses, Physiol. Rev. 27:200, 1947.

Water loss through the skin includes that which is transudated as well as that secreted by the sweat glands. On exposure to heat, the rate of transudation may rise to 50 ml. per square meter per hour or only about 10% of the output of the sweat glands under similar conditions. However, evaporation of transudates assumes importance when the sweating mechanism fails, e. g., heat retention, under conditions in which evaporation is the only means of heat elimination.

Suppression of sweating was uniformly observed before the onset of heat retention in all 10 cases in which it occurred during this study. This has been noted by others.[1] Heat retention was marked not only by the height to which body temperature rose but by its progressive and rapid rise. A rate of temperature rise of 1.2 to 2.0 degrees F per hour was observed at some time during the development of heat retention in all cases.

In some of the patients in whom pyrexia occurred, concomitant measurements of the posterior nasal temperature were made with a mercury clinical thermometer. This temperature was found to provide a very adequate means of detecting and following the course of heat retention. A rectal type thermometer is recommended to avoid the risk of breakage in the nose, and it is advised that the thermometer be inserted at least 2½ in. (6.25 cm.).

The key relationship upon which evaporative heat loss depends is the difference between the vapor pressure of water at skin temperature and the vapor pressure of water in room air. (The latter is equal to the vapor pressure of water at air temperature multiplied by the relative humidity.) When this difference becomes zero at wet-bulb temperatures above 96 F, heat loss by evaporation ceases. A fairly close parallelism exists between wet-bulb temperature and the vapor pressure of water at the wet-bulb temperature. For this reason, the wet-bulb temperature is the most important factor in determining the upper limits of tolerability of an environment, as has been shown by Eichna and associates.[17]

The dry-bulb temperature taken alone is a poor index of the thermal tolerability of an operating room. A comparison of figures 3 and 4 will make this clear. Both show body temperature changes occurring in relation to similar dry-bulb temperature ranges. However, in figure 4 where the relative humidity is high, the corresponding rate of temperature rise is distinctly steeper than in the other where relative humidity is low.

The relative humidity is misleading and unsatisfactory as a measure of the tolerability of an environment because it bears no absolute relationship to the vapor pressure of water in the air; the relative humidity may be the same at two different dry-bulb temperatures, and the moisture content be very different. Figure 3 illustrates the point; one is led to expect from the three lowest charts that, if the relative humidity is below 55%, evaporative loss will be adequate to prevent marked elevations of body temperature. However, the uppermost chart reveals rises in body temperature higher than some seen in figure 4. The explanation is that, although the relative humidity is below 55% in all the charts in figure 3, the average wet-bulb temperature is 76.5 F in the top chart and only 63 to 70 F in the bottom three.

Figure 5 shows the data replotted in relation to the wet-bulb temperature only. Without respect to system, the trends of body temperature rise follow intimately corresponding rises in wet-bulb temperature. It is to be noted that, above 75 F wet-bulb temperature, body temperature rises rapidly; this effect is marked in patients anesthetized by means of the to-and-fro system, but it also occurs when circle and non-rebreathing systems are used. In 10 patients in whom heat retention occurred, the average wet-bulb temperature ranged from 74 to 82 F; in only one case was the wet-bulb temperature below 75 F.

Evaporation of water from the lung normally dissipates about 10% of the body's heat loss. Warming the respired air to body temperature accounts for an additional 1 or 2%. The fact that this avenue of heat loss is both small and self-limited should be appreciated before any discussion of the effects of anesthesia system on heat economy is undertaken. For example, the non-rebreathing system permits free lung evaporation, yet this factor alone was not enough to prevent a slow rise in body temperature at comfortable room temperatures (fig. 5). This signifies that the summation of factors impeding heat dissipation or resulting in heat gain exceeded the effect of the patient's heat dissipating mechanisms including lung evaporation.

All gases have a very low specific heat; for this reason, only small amounts of heat are involved in heating or cooling large volumes of gas. For example, the heat loss to the body in raising the temperature of 500 liters of gas per hour in the non-rebreathing system from 81 F (fig. 6) to body temperature is 1.5 Cal. per hour. (Calculations: 500 liters times 10 degrees C times 0.0003 Cal. per liter per degree centigrade [specific heat of air] equals 1.5 Cal. per hour.)

Much more important as a factor in heat exchange via the lung is evaporation. In the non-rebreathing system, anhydrous gases are inspired, and gases saturated with water vapor at about 90 F are exhaled through the valve. Seventeen grams of water per hour representing 9.8 Cal. per hour heat loss may be vaporized in such a system. (Calculation: 0.034 gm. of water per liter of saturated gas times 500 liters per hour equals 17 gm. of water per hour; 17 gm. times 0.58 Cal. per gram. [heat of vaporization] equals 9.8 Cal. per hour.) The total heat loss, 11.3 Cal. per hour in this hypothetical example, represents about 16% of the 71 Cal. per hour basal heat production of an average-sized young man. It should be noted that, of this, over five-sixths is contributed by evaporative loss.

Lesser amounts of water are evaporated from the lung when the circle system is used. This can occur because gases saturated with water vapor are exhaled into the circle system at about 8 degrees F higher temperature than they return saturated to the patient. Gases return saturated because of the water produced by the neutralization reaction between carbon dioxide and soda lime.

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17. Eichna, L. W.; Ashe, W. F., Jr.; Bean, W. B., and Shelly, W. B.: The Upper Limits of Environmental Heat and Humidity Tolerated by Acclimatized Men Working in Hot Environments, J. Indust. Hyg. & Toxicol. 27: 59, 1945.

Condensation occurs in the accordion tube returning gases to the machine, which is at a lower temperature than the exhaled gas. Evaporation by this means is limited and is about 3.3 gm. of water per hour, corresponding to a heat loss of 1.9 Cal. per hour. (Calculation: the number of grams of water in 500 liters of saturated air at 97 F, the temperature of exhaled gases [0.0402 gm. per liter times 500 equals 20.1 gm.], minus the grams of water in 500 liters of saturated air at 89 F, the temperature of delivered gases [0.0335 times 500 equals 16.8 gm.] equals 3.3 gm. of water evaporated per hour. Besides this, 0.7 Cal. per hour is lost by warming gases to body temperature.) The total heat loss by the use of the circle system is about 4% of the basal heat production.

When the to-and-fro system is used, evaporation from the lung cannot occur because the temperature throughout the system is hotter than the exhaled gases (fig. 6). In fact, heat gain to the body results, not principally because of warming by hot gases, but because water condenses within the lung and airway when hot gases saturated with water vapor are cooled to body temperature. If the average temperature of inspired gases is 106 F, and it is assumed that the gas is cooled to body temperature by the time it reaches the alveoli, heat gain to the body through cooling of gases would be 0.6 Cal. per hour. On the other hand, the amount of condensation calculated to occur between lips and lung is 4.3 gm. of water per hour, equivalent to a heat gain of 2.5 Cal. per hour. (0.0532 gm. per liter times 500 liters minus 0.0442 gm. per liter times 500 liters equals 4.3 gm. of water per hour). The total heat gain represents an increase of about 4% of the basal heat production.

Cole has recently proposed that condensation of water in the respiratory tract constitutes a hazard in the use of carbon dioxide absorption systems. Such condensation does not occur when the circle absorption system is used, as is shown above, but only during the use of the to-and-fro system. The authors do not believe that this condensation per se constitutes any hazard to the patient, but may be disadvantageous only from the standpoint of the resultant heat gain to the body. At comfortable environmental temperatures, patients may be anesthetized for many hours by the absorption technique with no harmful effects whatsoever. Under these conditions, alternative avenues of heat dissipation besides evaporation from the lung are available.

On the other hand, under conditions of severe external thermal stress, i. e., wet-bulb temperatures of 75 F or higher, the heat dissipating mechanisms of the body are taxed greatly. Here, the use of the to-and-fro system, which results in a 4% heat gain rather than varying amounts of heat loss afforded by the other systems, is frequently associated with heat retention. In 9 of the 10 cases in this study in which heat retention developed, the to-and-fro system was used.

The quantitative differences in rate of body temperature rise with the three anesthesia systems are best seen in figure 5. This figure is chosen because here body temperature change is shown in relation to wet-bulb temperature, the most valid measure of the thermal stress of an environment. In figures 3 and 4, the issue of system effect is clouded by the vagaries resulting from subdivision according to dry-bulb temperature.

The height and rate of body temperature rise in patients anesthetized with the to-and-fro system were slightly but consistently greater than that seen in cases in which circle or non-rebreathing systems were used. This effect was considerably more marked above 75 F wet-bulb because of the greater number of patients in whom heat retention developed with the to-and-fro system. The reason for these effects seems to be clearly related to the differences in heat exchange via the lung that have already been discussed. Applying ice-bags to the to-and-fro cannister has been shown elsewhere [12] to reduce the air temperature effectually within the system. By this means, it may be possible to reduce the incidence of heat retention with use of the to-and-fro system to a level comparable to that of other inhalation systems.

Not as readily explained is the similarity of body temperature rises seen with the use of the circle and the non-rebreathing system. The non-rebreathing system should permit dissipation of 16% of the basal heat production, as compared with only 4% by the circle system. However, the temperature rise in certain of the charts in figure 5 is slightly higher with the non-rebreathing than with the circle system. No completely satisfactory explanation for this can be offered. It may be significant, however, that all patients anesthetized with the non-rebreathing system breathed spontaneously throughout, and respiration was not assisted. The respiration of most of the patients anesthetized with circle absorption was assisted, and in some, controlled respiration was performed. It is possible that the average respiratory minute-volume in the circle cases may have been greater than that in the non-rebreathing group. Since heat loss from the lung is directly related to the minute-volume, this may provide a partial explanation. In addition, since muscular activity increases heat production, controlled or assisted respiration should be associated with less internal heat production than when respiration is spontaneous.

Mention should be made of the treatment of heat retention in patients undergoing surgery. At the outset, the object of treatment should be clearly defined, i. e., the rapid reduction of the elevated body temperature. This is the paramount consideration, because to permit body temperature to remain markedly elevated is to risk injury to the central nervous system and liver and circulatory collapse. In experimental hyperthermia, the survival rate of animals is directly related to the speed with which the body temperature is lowered to normal limits.[6]

It should be added that it is no simple matter to prevent progression of hyperthermia in an adult of large body mass, and even more difficult to lower his body temperature to normal. The surgical draping not only impedes convection and evaporation but severely limits the body surface area available for cooling therapy. Under these circumstances, evaporative cooling methods, including the vaporization of volatile liquids on the skin, have proved ineffectual in our hands. As was mentioned previously, under operating room conditions, the most effective methods of treating pyrexia were found to be those that utilized conduction—the water-cooled mattress and ice-bags. In treating a large group of nonsurgical patients with heat retention, Ferris and co-workers [1] also concluded that evaporative methods reduced body temperature too slowly and recommended therapy with ice.

The effectiveness of ice-bags, properly placed and used in sufficient numbers, in promptly relieving dangerous degrees of hyperthermia is clearly shown in figure 1. The preferred locations for placement of ice-bags, insofar as the surgery permits, are between the thighs, the inguinal regions, axillas, flanks, and chest. In adults, eight or more bags, frequently refilled, are often required to reverse the course of a rapidly rising body temperature. Ice-bags, though somewhat inconvenient to use effectively, have the advantage of being generally available in hospitals.

The convenience of the water-cooled mattress when available, and its effectiveness used prophylactically in children is indisputable.[10] Our experience with the mattress has been limited to its use in children, where it has proved very satisfactory. Extension of its use to adults can be recommended. Other effectual contributory methods of treating heat retention include lightening the surgical drape and promoting air currents under the drapes.

Of lesser value in treatment are the use of evaporative methods of cooling, lightening of anesthesia (to lessen depression of the central thermoregulatory center), adequate replacement of water and salt, and changing from the to-and-fro anesthesia system to one that permits dissipation of heat by the lung. These less effectual methods are supplementary and should never be relied on alone to lower marked elevations of temperature.

Heat retention in surgical patients can be prevented. Air conditioning is of course very desirable from this point of view. Where air conditioning is not available, it is advisable to postpone elective surgical procedures when the wet-bulb temperature of the operating room is 75 F or above. The results of this study indicate that above this temperature, body temperature tends to rise substantially during prolonged operations regardless of the anesthesia system. Light surgical draping of the patient is strongly recommended during warm weather. Use of the to-and-fro anesthesia system is best avoided, or if it is used, the cannister should be cooled with ice. Low doses of belladonna premedicant drugs are advisable since they decrease sweating.[18] Patients should be brought to the operating room adequately hydrated and with any salt depletion corrected; fluid losses during surgery should be carefully replaced. Frequent measurements of the patient's body temperature should be made (the posterior nasal temperature is convenient to measure and is satisfactory) in order to permit prompt recognition of heat retention in its incipiency and institution of appropriate therapy. In addition, cessation of sweating should be regarded as an urgent danger signal. The value of the water-cooled mattress in prophylaxis has already been mentioned. All of the preceding remarks apply with special force in children, in whom the factors of a small body mass, high internal heat production, and immature thermoregulatory responses make heat retention a particular hazard.

SUMMARY AND CONCLUSIONS

Temperature measurements were made in 212 patients undergoing surgery and general anesthesia. The body temperature of 164 adult patients undergoing lengthy operations was studied in relationship to environmental temperature and humidity and choice of anesthesia system. The temperature in the airway and in various locations in the to-and-fro, circle, and non-rebreathing anesthetic systems were made. The dry-bulb temperature under the surgical drapes was measured over a 20 F room temperature range.

The wet-bulb temperature is the most satisfactory measure of the thermal tolerability of an environment. Below 75 F wet-bulb temperature, heat retention is uncommon in adult subjects who are afebrile before operation. Above this temperature, body temperature rises progressively, and sometimes markedly, regardless of the anesthesia system used.

Below 75 F wet-bulb temperature, the height and rate of body temperature rise is slightly but consistently greater in patients anesthetized with the to-and-fro system than when the circle or non-rebreathing systems are used. Above this temperature heat retention is much more frequent when the to-and-fro system is used than when circle or non-rebreathing techniques are employed. The reasons for these effects are discussed.

Heat retention is usually associated with cessation of sweating under conditions where evaporation is the principal means of heat dissipation. The rate of body temperature rise during heat retention may be as high as 1.2 degrees F to 2 degrees F per hour in adults. Methods of prevention and treatment of heat retention during surgery and anesthesia are discussed.

[18] Frumin, M. J., and Papper, E. M.: Inhibition of Sweating in Man by Scopolamine, Anesthesiology **12**: 627, 1951.

Common Salt.—It is certainly difficult, and perhaps impossible, to trace the earliest human use of common salt. It has been in use by civilized people since earliest recorded history. . . . Evidence has been assembled which suggests that salt came into use at the time man made the transition from a nomadic hunter-fisher, on a roasted meat and milk diet, to an agriculturist on a cereal grain and vegetable diet. The fact that herbivorous animals manifest a craving for salt by travel for long distances to salt licks, while carnivorous animals do not, intrigued the physiologic chemists of the latter half of the nineteenth century. Bunge may have been the first to advance the concept that the high potassium content of a grain and vegetable diet required in the herbivora an increased sodium intake. . . . Whether this is the true reason agricultural man began adding salt to his diet, certainly once he had, he took a great fancy to it. The preservative effect of salt must have been noted early, and food so preserved became vital through the non-harvest seasons and during voyages and migrations. There are many references to salt in the Bible, and there is a rich and entertaining literature concerned with the history, symbolism and financial problems of salt. . . .—George R. Meneely, M.D.; Robert G. Tucker, Ph.D.; William J. Darby, M.D., Ph.D., and Stewart H. Auerbach, M.D., Chronic Sodium Chloride Toxicity: Hypertension, Renal and Vascular Lesions, *Annals of Internal Medicine,* November, 1953.

POSTOPERATIVE PSEUDOMEMBRANOUS ENTEROCOLITIS

SUCCESSFUL TREATMENT WITH CORTICOTROPIN (ACTH)

John V. Prohaska, M.D., Michael C. Govostis, M.D.
and
Matthew Taubenhaus, M.D., Chicago

Perhaps no other postoperative complication presents so serious and baffling a problem as pseudomembranous enterocolitis. The lack of experience with this infrequent disease makes diagnosis difficult, and the heretofore absence of known treatment makes death certain in a large number of cases. These provocative factors and our observation that the lives of these patients may be saved by brief administration of corticotropin (ACTH) testify to the importance and urgency of this problem.

Pseudomembranous enterocolitis is a clinical entity that has been observed after major surgical operations. In our series of seven cases, it occurred four times after resection of the sigmoid or sigmoid and rectum, once after vagotomy and gastrojejunostomy, once after simple cholecystectomy, and once after right hemicolectomy and resection of the terminal ileum. Even though it occurs more frequently after intestinal surgery, it has been observed after operations on the brain, breast, uterus, gallbladder, and stomach.[1] Penner and Bernheim [2] and also Dixon and Weisman [1] have described the clinical and pathological aspects of this disease. Recently pseudomembranous colitis was observed after the administration of chlortetracycline (Aureomycin) and chloramphenicol.[3]

In the past two years, we have seen three patients in whom pseudomembranous enterocolitis developed after surgery on the colon. These patients received phthalylsulfathiazole (Sulfathalidine) and oxytetracycline (Terramycin) preoperatively. After surgery they became gravely ill. Because of our impression that some intra-abdominal complication had developed, two of these patients were operated on again. At operation, the diagnosis of pseudomembranous enterocolitis was definitely established. All three patients recovered rapidly a few days after therapy with corticotropin. Four other patients are included who received intensive supportive therapy but no corticotropin. In these four, the diagnosis of pseudomembranous enterocolitis was made at necropsy.

REPORT OF CASES

CASE 1.—A white man, 73 years of age, was seen in May, 1951, with a history of intermittent rectal bleeding for one year. He was in good physical condition, except for a mild hypertension of 180/76 mm. Hg. His history was noncontributory. Rectal and sigmoidoscopic examinations revealed a small carcinoma situated 8 cm. from the anus. The mucosa of the rectosigmoid otherwise appeared normal throughout the distance of sigmoidoscopic examination. The roentgen examination of the colon was also normal in all other respects. A biopsy of the lesion revealed it to be a papilliferous adenocarcinoma. The blood cell count, urinalysis, serology, serum urea nitrogen, serum chloride, serum proteins, and albumin-globulin ratio were all normal.

Before surgery, the patient received 1.5 gm. of phthalylsulfathiazole four times daily for three days and 250 mg. of oxytetracycline every six hours for five days. After abdominoperineal resection of the rectum, the patient was given 400,000 units of penicillin every 12 hours and 500 mg. of dihydrostreptomycin every 6 hours. He received 75 mg. of vitamin K during the period of antibiotic therapy. The patient began to run a septic fever from the seventh postoperative day until corticotropin was administered on the 35th postoperative day. His pulse rate was rarely over 100 per minute. He did not have a bowel movement until the seventh postoperative day, and thereafter the stool became liquid and contained shreds of mucosa. He appeared toxic and weak; his abdomen became distended; and finally edema developed in both lower extremities and scrotum. Ascites was noted on the 16th postoperative day. The leukocyte count gradually rose to 33,900 per cubic millimeter. During this period, the patient complained of pain and tenderness over the right side of the abdomen. Repeated roentgen examination of the abdomen showed increasing elevation of the right side of the diaphragm and marked gaseous distention of the colon (fig. 1). Numerous stool examinations, including cultures, failed to reveal the presence of pathogens.

An exploratory laparotomy was performed on the 21st postoperative day; 3,000 cc. of straw-colored ascitic fluid was aspirated. All of the gross pathological changes were limited to the colon, extending from the ileocecal valve to the colostomy. The wall of the colon was markedly thickened, hyperemic, edematous, and inflamed. The lumen was greatly distended. There was no evidence of obstruction. The abdomen was closed because no other abnormality was found. The patient improved for a few days, and then septic fever, ascites, and liquid stools containing shreds of mucus and blood developed again.

Roentgen examination, with colloidal thorium dioxide (Umbrathor) as the opaque medium, revealed a markedly dilated colon with large ulcerations (fig. 2). A sigmoidoscope inserted through the colostomy to a distance of 20 cm. showed edematous, friable, and necrotic mucosa resembling, but not pathognomonic of, ulcerative colitis. The sigmoidoscopic appearance of the mucosa resembled, somewhat, the type of colitis seen in heavy metal poisoning.

In spite of vigorous supportive therapy, the patient's condition deteriorated. After considerable deliberation, he was given 20 mg. of corticotropin every six hours. Within 24 hours after initiation of this treatment, he became afebrile. The patient improved rapidly, and his appetite and a feeling of well-being returned. His stool became formed; edema and ascites disappeared. One week later, the patient was discharged. He has been well to date.

CASE 2.—A white man, 59 years of age, was admitted to the Chicago Memorial Hospital on Dec. 5, 1952. A preoperative diagnosis of papilliferous mucinous adenocarcinoma of the rectosigmoid was made from biopsy taken at sigmoidoscopy. The only other abnormal finding was a moderate hypertension of 170/100 mm. Hg. This patient received similar preoperative preparation with phthalylsulfathiazole and oxytetracycline as in case 1. In this man too, a fever ranging from 100 to 103 F developed on the first day after abdominoperineal resection of the rectum and sigmoid. His postoperative symptoms of fever, leukocytosis, diarrhea, abdominal tenderness, and lethargy duplicated, in many respects, the course described in case 1. Thirty days after surgery, the patient was given 20 mg. of corticotropin every six hours for five days. *His recovery was immediate, spectacular, and complete.*

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[1] Dixon, C. F., and Weisman, R. E.: Acute Pseudomembranous Enteritis or Enterocolitis: Complication Following Intestinal Surgery, S. Clin. North America 28: 999-1023 (Aug.) 1948.

[2] Penner, A., and Bernheim, A. I.: Acute Postoperative Enterocolitis: Study on Pathologic Nature of Shock, Arch. Path. 27: 966-983 (June) 1939.

[3] Reiner, L.; Schlesinger, M. J., and Miller, G. M.: Pseudomembranous Colitis Following Aureomycin and Chloramphenicol, A. M. A. Arch. Path. 54: 39-67 (July) 1952.

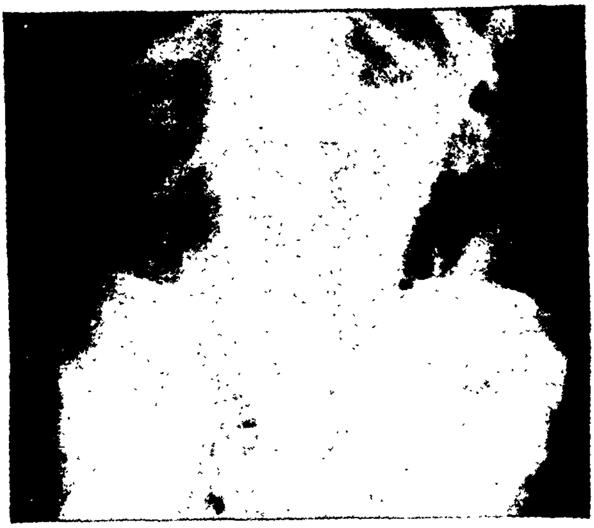

Fig. 1.—Roentgenogram of patient in case 1 showing a marked gaseous distention of the colon. Gas present in several loops of small bowel resembles paralytic ileus; patient had diarrhea.

Case 3.—A white man, aged 55, was admitted to the Chicago Memorial Hospital on May 6, 1953. A preoperative diagnosis of benign pedunculated polyp was made by roentgen examination of the colon. Sigmoidoscopic examination revealed normal rectal and sigmoidal mucosa. A moderate hypertension of 170/110 mm. Hg was noted. After preoperative preparation with phthalylsulfathiazole and oxytetracycline, a sleeve resection of 20 cm. of the sigmoid colon containing the benign polyp was performed. The continuity of the sigmoid colon was reestablished by an end-to-end anastomosis. After the operation, the patient was given the usual doses of penicillin and dihydrostreptomycin. As in the other cases, the postoperative course was marked by fever, leukocytosis, abdominal tenderness, paralytic ileus, bloody diarrhea, and weakness. The blood pressure remained normal. The patient was explored on the 10th postoperative day. The only pathological change found was limited to two lesions in the distal third of the ileum. These lesions measured 3 and 5 cm. in length and consisted of edema and hyperemia of the bowel wall simulating acute regional ileitis (fig. 3). This patient had no ascites. The colon and small bowel were moderately distended with gas, and the wall of the colon was slightly edematous. Intramuscular injections of 20 units of corticotropin given every eight hours for three days were initiated on the second day after exploration. The patient made an immediate improvement; his temperature returned to normal. The administration of corticotropin was discontinued on the fourth day because psychic episodes and hallucinations develeped. The patient gradually improved and was discharged as normal on the 23rd hospital day.

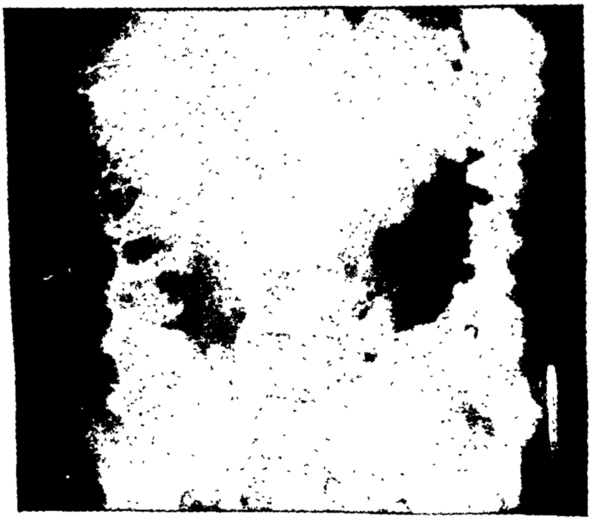

Fig. 2.—Roentgenogram showing edema and ulcerations of the colon mucosa, after colon of patient in case 1 was filled with colloidal thorium dioxide.

The remaining four patients received no corticotropin. The diagnosis of pseudomembranous enteritis or colitis was made only at postmortem examination. The salient features of these cases are summarized in the table.

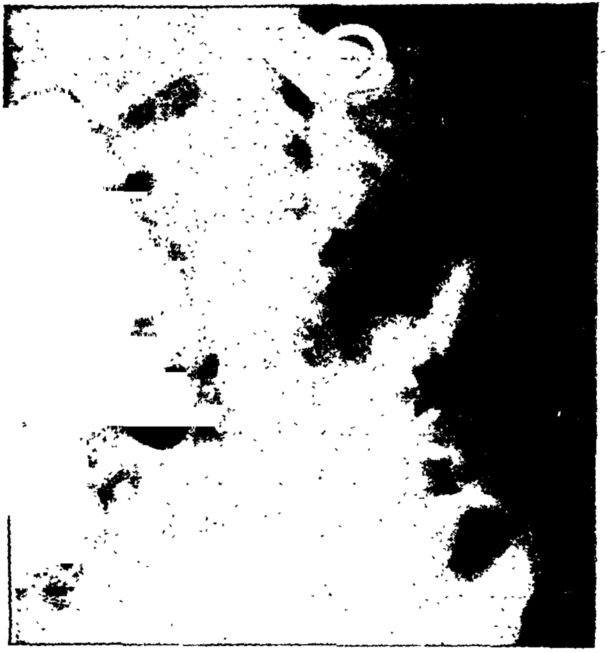

Fig. 3.—Roentgenogram of patient in case 3 showing pattern identical to that seen in paralytic ileus; patient had two small areas of necrotizing ileitis.

COMMENT

The symptoms and clinical findings common to all seven patients were fever, leukocytosis, diarrhea, weakness, lethargy, abdominal pain, tenderness, gaseous distention, and paralytic ileus. We observed shock in only three of the seven patients. In the remaining, the blood pressures during operation and hospitalization showed no significant changes. The three patients whose blood pressures fell to 80 mm. Hg systolic, or below, responded better to intravenous infusion of isotonic sodium chloride solution than to whole blood transfusion. The shock levels did not develop until the third postoperative day. This infrequent observation of shock differs somewhat from the report of Penner and Bernheim.[2] In 1939, they reported 40 cases of ulcerative enteritis found at necropsy. They concluded that the vasomotor mechanisms active in shock were responsible for the condition called postoperative enterocolitis. The common finding in all the cases they reported was shock. In 1948, Dixon and Weisman[1] reported on 23 cases of pseudomembranous ileocolitis. Their series included 21 deaths (91% mortality). In all of their cases the disease followed operations on the gastrointestinal tract.

Most authors have been chiefly concerned with the pathological nature of the disease.[4] The real cause of this complication is unknown. A recent case report presented at the Massachusetts General Hospital[5] expressed a very plausible warning. It stated that certain antibiotics may so alter the bacterial flora of the intestine that an overgrowth of bacteria, notably staphylococci, may achieve pathogenic proportions. The patient in the case under discussion died of pseudomembranous, necrotizing enteritis. A culture of the material found in the small bowel and blood culture grew staphylococci at necropsy. Even though this may be a real complication of antibiotic therapy in some cases, it does not explain the cause of pseudomembranous or necrotizing enterocolitis. Dixon's series and our cases included exhaustive cultures of stools, but no pathogen could be incriminated as the causative agent of the disease, except in our case 10 (see table). In this instance staphylococci were cultured from the intestinal content taken at necropsy. Yet, this is an important consideration in view of our treatment of postoperative necrotizing enterocolitis with corticotropin. The patient with staphylococcic enteritis would be harmed if given corticotropin; therefore, diagnosis of pseudomembranous enterocolitis must be made accurately and bacterial enteritis ruled out by careful stool cultures, before the use of corticotropin.

Summary of Four Cases of Pseudomembranous Enteritis or Colitis Diagnosed at Autopsy

Case*	Age, Yr.	Preoperative Medication	Diagnosis and Operation	Onset of Diarrhea, Post-operative Day	Cortico-tropin (ACTH)	Results
4	56	Phthalylsulfathiazole and oxytetracycline	Ulcerative colitis with old ileostomy; total colectomy; combined abdominoperineal resection	3rd	None	Died; necropsy—pseudomembranous enteritis
5	14	None	Cholecystitis and cholelithiasis; cholecystectomy; explored	4th	None	Died; necropsy—pseudomembranous enteritis
6 †	54	None	Duodenal ulcer; vagotomy; gastrojejunostomy	4th	None	Died; necropsy—acute necrotizing ileitis
7 ‡	29	None	Terminal ileitis; right hemicolectomy; terminal ileum	None	None	Died; severe enteritis

* Patients were all men.
† Data on patient in case 6 supplied by Dr. Hilger P. Jenkins.
‡ Data on patient in case 7 supplied by Dr. Samuel L. Goldberg.

The assumption that pseudomembranous enteritis and colitis are associated with the preoperative use of antibiotics is questionable The first case was described by Finney[6] in 1893; certainly his patient received no antibiotics. The same is true of the series described by Penner and Bernheim in 1939. Three of our patients received no antibiotics preoperatively. These positive facts are strong evidence against the causative role of the antibiotics.

Cognizant of the importance of shock in pseudomembranous enterocolitis, Hilsabeck and Dixon[7] stressed vigorous antishock treatment. Since we do not know the cause of the disease, we may indulge in reasonable speculations. Shock in this case may, at least in part, be due to loss of fluids and electrolytes by way of diarrheal stools. The treatment, therefore, must consist of vigorous replacement of water and electrolytes. Be that as it may, it was not possible to keep four of our patients alive by vigorous water and electrolyte replacement, supplemented by plasma and blood transfusions. In the consideration of the cause of necrotizing enteritis and colitis, one must, therefore, realize that measurable loss of water and electrolytes when adequately replaced, still do not prevent death from shock. It must be reemphasized that clinically recognizable shock did not occur in all our cases. We did not observe excessive blood loss or infection or cardiac involvement prior to or shortly after surgery that could be held responsible for peripheral vascular collapse. Innumerable surgical or hemorrhagic shocks and peripheral vascular collapse in medical diseases have, on the other hand, been observed in the past without the manifestation of necrotizing enterocolitis. Shock, therefore, played no major role in the cause of the disease in our experience.

After observing four deaths, we decided to treat this fatal complication with adrenocorticotrophic hormone. The three patients who were treated with corticotropin recovered promptly and completely. Even though the series of cases is small, we offer this method as a lifesaving therapy for pseudomembranous enterocolitis, a complication that up to the present time was almost always fatal.

The strikingly beneficial effect of the therapy with corticotropin in our cases permits further speculation as to the mechanisms of this disease process. Any bacterial disease would have been markedly aggravated by corticotropin. Septicemia or spread of the local infection would be the expected result of such therapy. We believe, therefore, that the disease is not an infection; likewise, it cannot be assumed that the disease is of endocrine origin. It has been well established that the pharmacological action of adrenal steroids stimulated by corticotropin becomes evident in a variety of conditions other than

endocrine in nature. Furthermore, the pathological changes in the gastrointestinal tract in cases of proved adrenal failure do not include changes suggesting pseudomembranous enterocolitis. Experimental studies are in progress to elucidate the mechanism of this condition. One of the possibilities being explored is that of tissue necrosis resulting from antigen-antibody reaction. Further clinical observations and experimental work will be necessary to prove such an assumption.

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[4] Kleckner, M. S., Jr.; Bargen, J. A., and Baggenstoss, A. H.: Acute Pseudomembranous Enterocolitis, Proc. Staff Meet., Mayo Clin. 28: 313-319 (June 3) 1953. Penner and Bernheim.[2] Reiner and others.[3]

[5] Case Records of the Massachusetts General Hospital, Case 39271, New England J. Med. 249: 29-33 (July 2) 1953.

[6] Finney, J. M. T.: Gastroenterostomy for Cicatrizing Ulcer of Pylorus, Bull. Johns Hopkins Hosp. 4: 53-54 (March) 1893.

[7] Hilsabeck, J. R., and Dixon, C. F.: Treatment of Acute Postoperative Pseudomembranous Enterocolitis, Am. J. Surg. 84: 114-117 (July) 1952.

SUMMARY AND CONCLUSIONS

Acute, postoperative pseudomembranous enterocolitis was cured in three patients with the administration of 20 mg. of corticotropin (ACTH) three times daily for periods ranging from 4 to 10 days. Bacterial enteritis should be ruled out before the administration of corticotropin. The possible causes of the disease are discussed, but, as yet, the true cause remains unknown.

25 E. Washington St. (2) (Dr. Prohaska).

RADIATION MANAGEMENT OF OTHERWISE HOPELESS THORACIC NEOPLASMS

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and
Seymour S. Langer, M.D., Chicago

Every physician should be aware of his responsibility if he declares a cancer patient hopeless and leaves him to his fate. The term "hopeless" implies the death sentence of the individual patient. In medical use this term can mean either incurability or no possibility of a favorable influence on the patient's condition, even of a palliative nature. In our interpretation, the term "hopeless" should be reserved for the very few patients whose suffering might be increased or whose fate might be speeded by any method of attacking the cancer. These are obviously terminal situations.

"Hopeless" is usually applied when a thoracic neoplasm is inoperable, although we often see patients with lesions considered operable who have no chance of cure by surgery, owing to spread of the neoplasm. Further, we know that some surgically hopeless patients can be cured by radiation, and that good palliation can be obtained in excess of that resulting from other known forms of treatment. The secret of increasing improvement in these situations is giving more patients the benefit of the doubt and giving a carefully planned treatment with adequate dosage. In the older material that we have reviewed there are only a few cases in which a palliative gesture resulted in a surprising degree of response, but these treatments had been performed without a uniform plan.

Our attitude toward palliation and curability has been influenced by experiences with the 23 mev betatron. In experimental work with it we have been impressed with its effects on local or primary neoplasms even though fatal invasion of the disease was in progress elsewhere. Consequently, our feeling is that we could offer better results if patients with cancer were referred to us earlier. Our continuing use of conventional radiation therapy has been enhanced as a result of transfer of ideas and methods from betatron treatment to the more readily available machines.

What should be regarded as accomplishment in palliative effect? The usual criterion of five year survival cannot be used, nor does absolute survival time alone reflect the true nature of palliative effect. If one follows with full human sympathy the fate and long suffering of these unhappy patients, one cannot appraise highly enough the temporary relief enabling them to return to a useful family, social, and professional life for any length of time. Survival time may not be significantly prolonged in many of these patients, but the important thing is that terminal suffering is frequently postponed and shortened by these palliative effects. Therefore, we consider the following factors in evaluating palliation: 1. The objective local effect. This is judged by physical examinations, by comparative measurements on the surface, by palpation, by roentgenograms, and by histopathology either serially during life or by final comparison at autopsy. 2. The clinical symptoms. Such criteria as pain, cough, dyspnea, and dysphagia are used and are evaluated in terms of effort expended, medication required, and changes in habits or preferences. These impressions are best gained from the patient, his family, and the physician. 3. The general condition. This relates to weight, strength, working ability, psychological attitude to normal family and social life, and duration of useful life. 4. The absolute survival time from start of radiation. 5. The extent of terminal distress. This is evaluated in terms of postponement, duration as compared with survival time, and intensity.

The clinical material that we wish to present represents some of our experiences and impressions from working with hopeless chest tumors, primarily orginating in the lung and esophagus. The selectively bad composition of our material, the varying locations of primary tumors, the differences in histopathology, and the spread in age incidence continue to hamper our statistical inclinations; therefore, we will refer to representative patients treated with the betatron and others treated by conventional x-rays.

BETATRON X-RAY TREATMENT

The lung cancer cases can be separated into two groups in which the results were very favorable: Pancoast tumors and primary lesions of the upper bronchus. Four patients suffering from the Pancoast type of tumor have been treated. One is living and well 34 months after

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From the Department of Radiology, University of Illinois College of Medicine.

Read before the Section on Radiology at the 102nd Annual Meeting of the American Medical Association, New York, June 4, 1953.

Lack of space limits the number of figures to six representative cases instead of the original 23 cases.

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25 E. Washington St. (2) (Dr. Prohaska).

RADIATION MANAGEMENT OF OTHERWISE HOPELESS THORACIC NEOPLASMS

Lewis L. Haas, M.D., Roger A. Harvey, M.D.
and
Seymour S. Langer, M.D., Chicago

Every physician should be aware of his responsibility if he declares a cancer patient hopeless and leaves him to his fate. The term "hopeless" implies the death sentence of the individual patient. In medical use this term can mean either incurability or no possibility of a favorable influence on the patient's condition, even of a palliative nature. In our interpretation, the term "hopeless" should be reserved for the very few patients whose suffering might be increased or whose fate might be speeded by any method of attacking the cancer. These are obviously terminal situations.

"Hopeless" is usually applied when a thoracic neoplasm is inoperable, although we often see patients with lesions considered operable who have no chance of cure by surgery, owing to spread of the neoplasm. Further, we know that some surgically hopeless patients can be cured by radiation, and that good palliation can be obtained in excess of that resulting from other known forms of treatment. The secret of increasing improvement in these situations is giving more patients the benefit of the doubt and giving a carefully planned treatment with adequate dosage. In the older material that we have reviewed there are only a few cases in which a palliative gesture resulted in a surprising degree of response, but these treatments had been performed without a uniform plan.

Our attitude toward palliation and curability has been influenced by experiences with the 23 mev betatron. In experimental work with it we have been impressed with its effects on local or primary neoplasms even though fatal invasion of the disease was in progress elsewhere. Consequently, our feeling is that we could offer better results if patients with cancer were referred to us earlier. Our continuing use of conventional radiation therapy has been enhanced as a result of transfer of ideas and methods from betatron treatment to the more readily available machines.

What should be regarded as accomplishment in palliative effect? The usual criterion of five year survival cannot be used, nor does absolute survival time alone reflect the true nature of palliative effect. If one follows with full human sympathy the fate and long suffering of these unhappy patients, one cannot appraise highly enough the temporary relief enabling them to return to a useful family, social, and professional life for any length of time. Survival time may not be significantly prolonged in many of these patients, but the important thing is that terminal suffering is frequently postponed and shortened by these palliative effects. Therefore, we consider the following factors in evaluating palliation: 1. The objective local effect. This is judged by physical examinations, by comparative measurements on the surface, by palpation, by roentgenograms, and by histopathology either serially during life or by final comparison at autopsy. 2. The clinical symptoms. Such criteria as pain, cough, dyspnea, and dysphagia are used and are evaluated in terms of effort expended, medication required, and changes in habits or preferences. These impressions are best gained from the patient, his family, and the physician. 3. The general condition. This relates to weight, strength, working ability, psychological attitude to normal family and social life, and duration of useful life. 4. The absolute survival time from start of radiation. 5. The extent of terminal distress. This is evaluated in terms of postponement, duration as compared with survival time, and intensity.

The clinical material that we wish to present represents some of our experiences and impressions from working with hopeless chest tumors, primarily orginating in the lung and esophagus. The selectively bad composition of our material, the varying locations of primary tumors, the differences in histopathology, and the spread in age incidence continue to hamper our statistical inclinations; therefore, we will refer to representative patients treated with the betatron and others treated by conventional x-rays.

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The lung cancer cases can be separated into two groups in which the results were very favorable: Pancoast tumors and primary lesions of the upper bronchus. Four patients suffering from the Pancoast type of tumor have been treated. One is living and well 34 months after

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Most authors have been chiefly concerned with the pathological nature of the disease.[4] The real cause of this complication is unknown. A recent case report presented at the Massachusetts General Hospital [5] expressed a very plausible warning. It stated that certain antibiotics may so alter the bacterial flora of the intestine that an overgrowth of bacteria, notably staphylococci, may achieve pathogenic proportions. The patient in the case under discussion died of pseudomembranous, necrotizing enteritis. A culture of the material found in the small bowel and blood culture grew staphylococci at necropsy. Even though this may be a real complication of antibiotic therapy in some cases, it does not explain the cause of pseudomembranous or necrotizing enterocolitis. Dixon's series and our cases included exhaustive cultures of stools, but no pathogen could be incriminated as the causative agent of the disease, except in our case 10 (see table). In this instance staphylococci were cultured from the intestinal content taken at necropsy. Yet, this is an important consideration in view of our treatment of postoperative necrotizing enterocolitis with corticotropin. The patient with staphylococcic enteritis would be harmed if given corticotropin; therefore, diagnosis of pseudomembranous enterocolitis must be made accurately and bacterial enteritis ruled out by careful stool cultures, before the use of corticotropin.

The assumption that pseudomembranous enteritis and colitis are associated with the preoperative use of antibiotics is questionable. The first case was described by Finney [6] in 1893; certainly his patient received no antibiotics. The same is true of the series described by Penner and Bernheim in 1939. Three of our patients received no antibiotics preoperatively. These positive facts are strong evidence against the causative role of the antibiotics.

Cognizant of the importance of shock in pseudomembranous enterocolitis, Hilsabeck and Dixon [7] stressed vigorous antishock treatment. Since we do not know the cause of the disease, we may indulge in reasonable speculations. Shock in this case may, at least in part, be due to loss of fluids and electrolytes by way of diarrheal stools. The treatment, therefore, must consist of vigorous replacement of water and electrolytes. Be that as it may, it was not possible to keep four of our patients alive by vigorous water and electrolyte replacement, supplemented by plasma and blood transfusions. In the consideration of the cause of necrotizing enteritis and colitis, one must, therefore, realize that measurable loss of water and electrolytes when adequately replaced, still do not prevent death from shock. It must be reemphasized that clinically recognizable shock did not occur in all our cases. We did not observe excessive blood loss or infection or cardiac involvement prior to or shortly after surgery that could be held responsible for peripheral vascular collapse. Innumerable surgical or hemorrhagic shocks and peripheral vascular collapse in medical diseases have, on the other hand, been observed in the past without the manifestation of necrotizing enterocolitis. Shock, therefore, played no major role in the cause of the disease in our experience.

After observing four deaths, we decided to treat this fatal complication with adrenocorticotrophic hormone. The three patients who were treated with corticotropin recovered promptly and completely. Even though the series of cases is small, we offer this method as a lifesaving therapy for pseudomembranous enterocolitis, a complication that up to the present time was almost always fatal.

The strikingly beneficial effect of the therapy with corticotropin in our cases permits further speculation as to the mechanisms of this disease process. Any bacterial disease would have been markedly aggravated by corticotropin. Septicemia or spread of the local infection would be the expected result of such therapy. We believe, therefore, that the disease is not an infection; likewise, it cannot be assumed that the disease is of endocrine origin. It has been well established that the pharmacological action of adrenal steroids stimulated by corticotropin becomes evident in a variety of conditions other

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irradiation and is working daily. The original intractable pain gradually disappeared during the course of treatment and the original rib destruction spontaneously recalcified (fig. 1*A* and 1*B*), but radiation fibrosis augmented by excessive dosage and too rapidly given treatment during our early experience has produced a fluctuating circulatory disturbance. This may have been further aggravated by a series of post-treatment biopsies, all of which showed only fibrosis. A second patient followed an almost identical course of relief of pain, reconstitution of destroyed ribs,[1] and working ability for 17½ months, at which time he died at home. Information from relatives was not conclusive enough to indicate coronary occlusion or recurrence of tumor. A third patient has been observed for eight months and [illegible] asymptomatic and working. The destroyed bony structures are recalcifying. A fourth patient is under treatment and is [illegible] markedly relieved of pain.

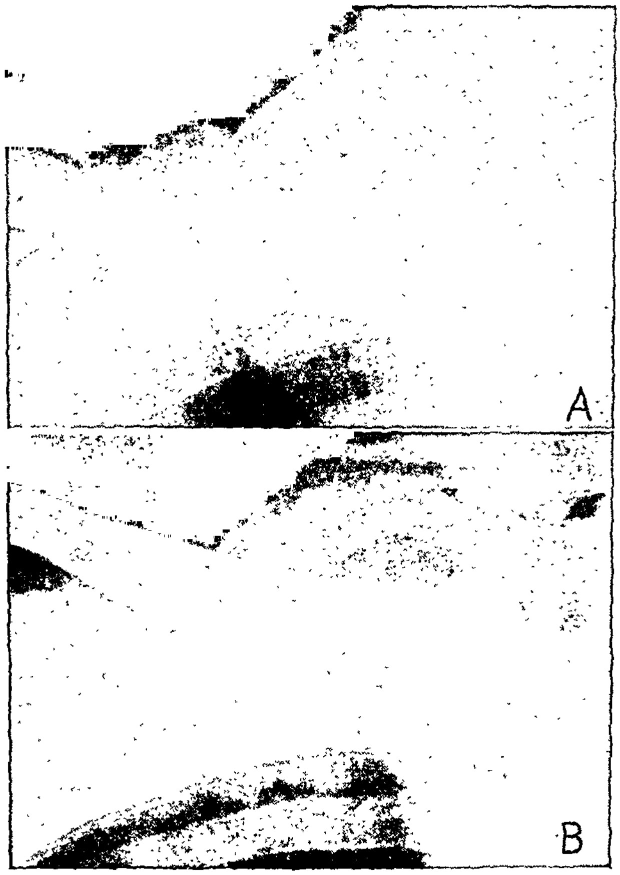

Fig. 1. *A*, tumor of the right superior sulcus, with destruction of the second rib. *B*, two years after betatron irradiation (11,000 "r" tumor dose in 26 days, eight fields). Recalcification of the second rib. After 35 months the patient was living, without tumor evidence.

In the second group are upper bronchus lesions with superior anterior mediastinal metastases. One patient having right-sided primary lesion with peripheral subpleural metastases and large cervical node masses that [illegible] and superior vena cava symptoms. Betatron rays were used, and after this there was marked shrinkage of areas of involvement, respiratory and circulatory symptoms disappeared, and the agony of a death from vena cava syndrome was averted.[2] Metastases in the abdomen and liver, however, subsequently led to a rapid decline. The second patient, with a primary tumor in the upper left bronchus, is still living, free from pain, working, and without radiological evidence of tumor 16 months after treatment (fig. 2*A* and 2*B*).

A third group of nine patients, with varying localizations and extensions, did not have a significantly increased survival time, but palliation could be noted in the majority by any standards. In several patients local growth arrest or regression of the primary tumor could be observed on roentgenograms. In one patient a terminal manifestation of extensive bilateral lung metastases was limited to the lung areas that had not been irradiated.

The most gratifying effect of this treatment is measured in terms of clinical symptoms. Most patients were definitely improved. Pain, dyspnea, cough, and expectoration frequently subsided or diminished. Some patients regained their strength and their hope in life and resumed their usual useful way of life. A cheerful outlook is not maintained for very long, however, since in most of these patients there is a rather sudden and rapid downhill course. The terminal agony is therefore comparatively shortened, in some cases to only one week. In this connection two patients should be mentioned. One was given irradiation eight months after diagnosis, during which time he had become incapacitated. After he was given irradiation he lived six and one-half months without pain, and with only trivial cough and expectoration. He was able to work up until a week before his death, when sudden occlusion of a main bronchus occurred. The other patient was disabled by a lower right bronchus lesion. Exploration showed tumor invasion of the lower pulmonary vein and right auricular wall. A known metastasis in the iliac spine prevented walking. After irradiation was given to the chest and iliac lesions, the chest pain disappeared, the cough subsided, the lung lesion regressed, and the iliac metastatic area began to recalcify. The patient could walk unaided. As a physician he was able to resume practice and continued for three and one-half months until a week before death, when dyspnea occurred suddenly and progressed rapidly. Radiological regression in this patient is shown in figure 3.

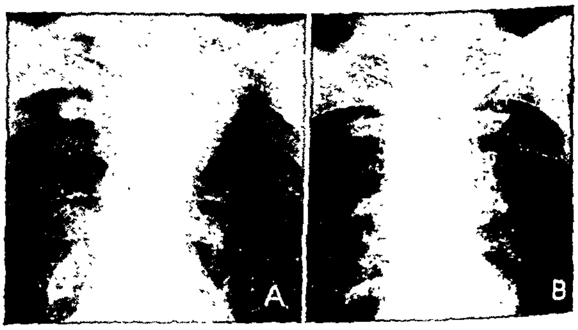

Fig. 2. *A*, bronchogenic carcinoma of the left upper lobe with metastatic mass in the anterior upper mediastinum, extending to the right. Paralysis of the left vocal cord. *B*, seven months after betatron irradiation (10,000 "r" tumor dose in 40 days, six fields). The tumor mass disappeared. After 16 months the patient was living, without evidence of tumor.

In trying to explain why Pancoast tumors and the more superior-anterior lesions seem to respond better, we must take into account earlier diagnosis and the relatively late incidence of lymphatic and hematogenous spreads in these cases. This permits a greater chance of local annihilation of the lesion by irradiation. In other locations the spread seems to be faster, is especially common by the time our patients are given diagnoses and is almost uniform by the time they are referred for treatment. We feel that the effort expended in treating these patients is worth while and would promise better final results if the radiation could be applied to more favorable stages of bronchogenic cancer.

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[1] Harvey, R. A.; Haas, L. L., and Laughlin, J. S.: Betatron Cancer Therapy, Radiology 58: 23-34, 1952, fig. 7 and 8.

[2] Harvey, R. [illegible], and others, figs. 10 and 11

Not much could be expected in the way of results in our patients with esophageal cancer because they were all in the most advanced stages. These patients do permit the development of techniques, however, and as we can destroy more and more areas of involvement, we develop courage to take the responsibility of attempting cure in more favorable cases. All of these patients have had either distant metastases or involvement of vessels, lymphatics, trachea, etc. It is no wonder that of six patients in this group, only one survived 7 months, and one 11 months. Additional recent patients are still living. One of the reasons why we see these patients so late is that so much time is lost between symptoms and diagnosis and further between diagnosis and radiation while various other treatments are considered and abandoned. The significance of delay is demonstrated in one of our patients. There was only a submucous constricting ring at initial diagnosis. Seventeen days later the tumor broke through, formed a fungating mass, and occluded the lumen (fig. 4*A* and 4*B*).

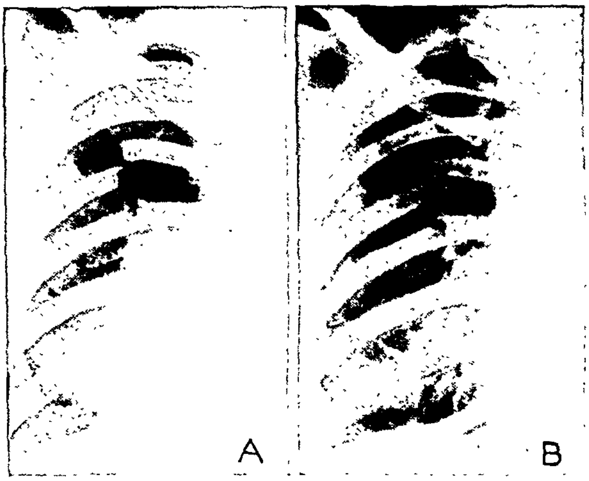

Fig. 3. *A*, bronchogenic, poorly differentiated epidermoid carcinoma. Multiple metastases were already present at time of the irradiation. *B*, after palliative betatron irradiation (8,500 "r" in 38 days). Radiological regression of the primary lesion and clinical regression of the pulmonary symptoms. The patient died in two and one-half months with generalized metastases.

In spite of the short survival of the patients, our experiences are very encouraging and raise the hope that esophageal carcinoma patients can be given irradiation with much better results than thought possible in the past. Nearly all of these patients showed marked improvement in the mechanical function of the involved area, and some lesions appeared to heal. In two patients autopsies showed no gross or microscopic evidence of residual cancer in the treated zone. No significant difference in palliation appeared in this small group among cervical, middle, or lower esophagus lesions. An increase in the caliber of the passage was noted in most patients, and some had a normal lumen restored (fig. 5*A* and 5*B*, 6*A* and 6*B*). In spite of this, we urge gastrostomy in every case. In some of the cases in which this was resisted, either by the referring physician or by the patient, it had to be performed during, or after, treatment. This necessarily interrupted treatment and further aggravated the weakened condition of the patient at a critical time. There are several reasons for requiring a gastrostomy in these patients. 1. Malnutrition and even cachexia [illegible] present in most of these patients, and this cannot be satisfactorily overcome while a progressing disturbance of the esophagus exists. 2. Delivery of an adequate dosage of radiation produces a mucosal reaction in the membrane for several days or weeks that adds to the discom-

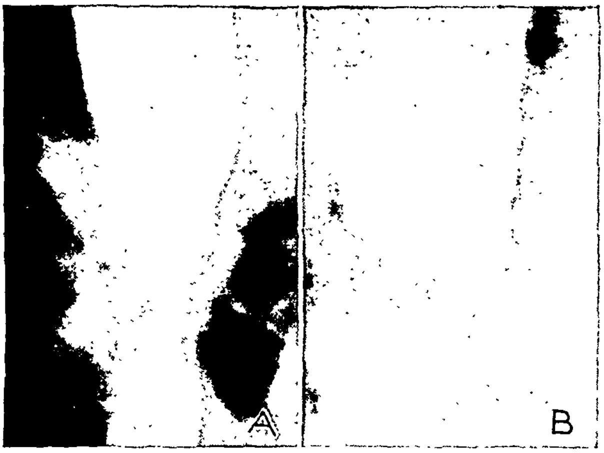

Fig. 4. *A*, epidermoid carcinoma of the esophagus; only annular constriction. *B*, seventeen days later, fungating tumor mass occluding the lumen with suprastenotic dilatation.

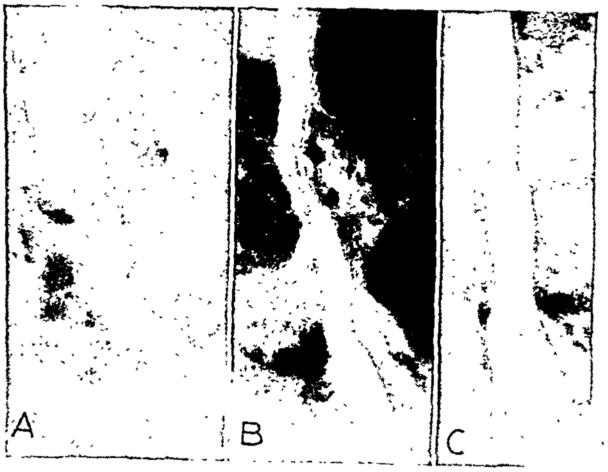

Fig. 5. *A*, epidermoid carcinoma of the esophagus with [illegible] prestenotic dilatation, before irradiation. *B*, after betatron irradiation (10,000 "r" in 4½ weeks). Normal contour [illegible], free passage. *C*, five months later, generally wider lumen, [illegible] rigid wall. In spite of the local regression, constant dysphagia, [illegible] weakening of the patient. The patient died in five and one-half months of bronchopneumonia. Autopsy revealed no residual tumor [illegible]. The [illegible] surface showed a denuded, nonreepithelized area in the [illegible]. Lungs showed irradiation fibrosis.

fort of swallowing and undernutrition. 3. The breakdown and disappearance of tumor tissue leaves a temporarily denuded esophageal wall without mucosal covering and, at times, with a slow healing ulcerative-like defect in the zone of the original lesion (fig. 6*C*). These reepithelize slowly, and the denuded area is particularly vulnerable. It continues the symptoms of dysphagia, and solid food may cause reulceration or elicit hemorrhage. 4. The healing process and scarring of the denuded area increases the chances of additional shrinkage and narrowing for weeks or months after irradiation.

Occasionally difficulties arise from gastrostomies, but these can be minimized by proper postoperative care and training. One of our patients died of postoperative peritonitis. Hospital bed facilities for the temporary postradiative care of these patients is, at times, as important as the postoperative hospital care. Both palliation and survival time would reflect the advantage of adequate nursing care of these patients after radiation.

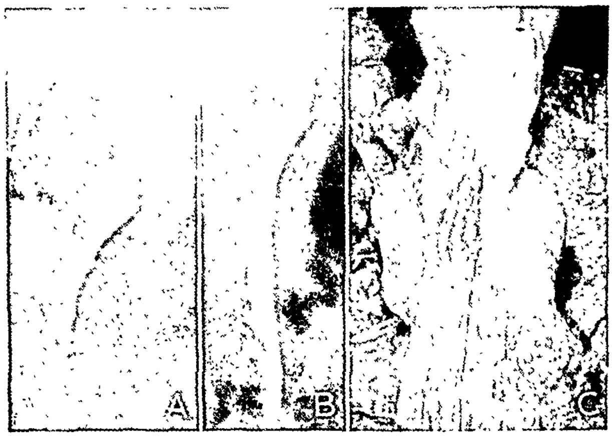

Fig. 6. *A*, extensive epidermoid carcinoma of the esophagus. *B*, after betatron irradiation of 10,000 "r" in 29 days, regression of the lesion, free passage; probably ulceration of the mucosa. *C*, autopsy after three months showed generalized metastases, but no residual cells locally. A nonreepithelized, denuded area at the mucosal surface. Periesophageal mass at the ulcer level was histologically fibrous scar tissue and contained no more tumor cells.

CONVENTIONAL X-RAY TREATMENT

In the last 15 years a large number of similar patients have been treated in our department with 200 kv. and 400 kv. x-rays. Statistical comparisons between this group and the betatron group are not significant at this time owing to the marked disproportion in numbers of patients in the two groups and also because of the poor follow-up in many of the earlier cases. Palliative effects were, and continue to be, observed in patients treated with conventional x-rays, but our present impression is that it is not so consistently observed or so prominent in this group as in the betatron group. Survival has rarely continued as long as six months, and we have not seen a complete cancerocidal effect in autopsy specimens from this group.

During the last year seven patients with bronchogenic cancer were treated with the aid of grid techniques. Moderate palliation was obtained in two of them, but none survived six months. Among the patients treated without grid, palliation was spotty. One patient resumed work temporarily and survived eight months. Another is alive and in good condition over a year later but is unusual in that the tumor was so radiosensitive. He received only 1,100 r tumor dose without grid and 1,100 r with grid. His biopsy specimen has obviously been reevaluated several times but without change in opinion regarding the diagnosis.

The esophageal cancer patients showed better palliation during this same period. Three patients have had excellent palliation: one is in good condition 14 months later, but with metastatic cancer in the lymph nodes of the neck; another had complete relief of obstructive symptoms for 4 months, and recurrent symptoms at a different level disappeared for 5 months after another course of treatment. An additional patient is doing very well 8 months after treatment.

COMMENT

Any difference in results between the betatron group and the conventional x-ray group is undoubtedly due to a more adequate and uniform depth dose distribution with the betatron. In spite of this, palliation can also be expected to follow adequate irradiation with conventional x-ray therapy. Therefore, no patient should be denied irradiation therapy unless he has reached a terminal status. High voltage therapy is preferable if it is available, but a good effect can be obtained with conventional x-ray therapy if the therapist will devote just as much care to these patients with a poor prognosis as he would to those patients with a chance of cure. We rarely distinguish, with the betatron, between palliative and curative treatment planning. We give as high a tumor dose as possible and judge it primarily by individual tolerance. One can make a good orientation as to patient tolerance and tumor susceptibility on the basis of a half curative tumor dose (3,000 r at 400 kv., equivalent to 5,000 r with the betatron).

SUMMARY AND CONCLUSIONS

The term "hopeless" should not be applied to any cancer patient until all known therapeutic procedures have been attempted or the patient is in a terminal status. "Hopeless" should not be used just because one particular method of treatment offers no chance of cure or good palliation.

Palliation in thoracic neoplasms is judged on the basis of objective local effects, alteration in clinical symptoms, general condition and useful life of the patient, absolute survival time, and the duration of the terminal distress. The 23 mev betatron x-ray beam shows unusual evidence of palliation and possibility of cure for patients with the Pancoast type of tumor of the upper chest, better than average palliation with commoner advanced bronchogenic cancers, and good palliation with indications of cures possible for primary esophageal neoplasms in earlier stages. Conventional x-ray treatments also offer palliation, but so far they offer less chance for patients with advanced cancer, owing to less adequate and uniform tumor dose. High voltage therapy planning does not distinguish between palliative and curative intent. If the same care were used with conventional x-ray treatment planning, greater palliation for patients with advanced cancer would be obtained.

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CLINICAL NOTES

TREATMENT OF ACUTE HEROIN INTOXICATION WITH NALORPHINE (NALLINE) HYDROCHLORIDE

Murray Strober, M.D., Brooklyn

Numerous reports have appeared in the literature demonstrating that in animals nalorphine (Nalline) hydrochloride is an effective antagonist to the toxic effects of morphine and other of its derivatives.[1] Preliminary experimental studies with human beings showed that nalorphine reversed the respiratory depression caused by morphine, dihydromorphinone (Dilaudid) hydrochloride, methadone, meperidine, and the proprietary preparation containing alkaloids of opium, Pantopon.[2] Patients suffering from overdoses of methadone, racemorphan (Dromoran) hydrobromide, or dihydromorphinone have been successfully treated.[3] It seemed reasonable to believe, therefore, that nalorphine would be of benefit in treating heroin toxicity since heroin is a diacetyl derivative of morphine.

This report is concerned with the treatment of a patient suffering from acute heroin poisoning. To my knowledge, no instance of acute heroin toxicity treated with nalorphine has appeared in the literature.

REPORT OF A CASE

A 22-year-old married mulatto woman entered Kings County Hospital on May 1, 1953, at 10:35 p. m. in coma. Earlier that day, the patient had engaged in sexual contacts with several men who were heroin addicts. At about 6 p. m. the patient was given an unknown quantity of heroin intravenously by means of a hypodermic needle attached to a medicine dropper. The patient then apparently "blacked out" and could not recall any further drug administration. Later, the other addicts noted that the patient was breathing with difficulty and was cyanotic. They called the police and confessed that they had given her heroin. The police immediately brought the patient by ambulance to Kings County Hospital. This was allegedly the first experience the patient had with heroin, although she stated that she had smoked marihuana cigarettes and "sniffed" cocaine previously.

On admission, the patient was comatose, with respiratory arrest and pinpoint pupils. She was promptly placed in a respirator, but no improvement was noted. The patient appeared lifeless. She was removed from the respirator, and artificial respiration was administered manually. The patient was then given 1 cc. (5 mg.) of nalorphine intravenously. Within one minute, the patient started to breathe, her pupils dilated, and she rapidly became conscious and sat up. She then became belligerent.

Her personal and her family history as well as a system's review were noncontributory. The social history revealed that the patient was born in North Carolina and lived there most of her life. She was married and had two living children. She had left her husband seven months previously and had come to live in New York City. Life as a waitress was "dull," and the patient described herself as "depressed and unhappy." She seldom smoked and drank only small amounts of whisky.

Physical examination was performed after the patient had responded to nalorphine. The patient was a well-developed, well-nourished, light-skinned mulatto woman who was quarrelsome, confused, and somewhat somnolent. She vomited intermittently. The pertinent findings were: temperature, 98 F (by rectum); pulse rate, 100 per minute and thready; respirations, 16 per minute; blood pressure, 90/60 mm. Hg; and skin, warm and moist. No rashes or petechiae were noted. There was no external asymmetry of the head. The pupils were now dilated, round, and regular and responded well to light. Funduscopic examination was normal. The ear canals and drums were normal. There was no inflammation of the mouth. The neck was supple, and there was no venous distention. The thyroid gland was not palpable; the trachea was in the midline; and there were no palpable cervical nodes. The breasts and nipples were normal. There were no nodes or masses in either axilla. The respiratory excursions of the chest wall were slightly diminished bilaterally. There were moist, inspiratory and expiratory rales heard both anteriorly and posteriorly from the apexes to the bases. The heart sounds were somewhat obscured by the respiratory noises. No murmurs were audible. The apical rate was 100. The radial pulse was thready. The abdomen was soft, and the liver, spleen, kidneys, and masses were not felt. Pelvic examination showed that the cervix was firm and that an old laceration was present. There was slight tenderness on movement of the cervix. Rectal examination revealed no masses or tenderness. A needle puncture wound was noted in the right antecubital fossa. No lymph nodes were palpable. The cranial nerves were intact. Superficial and deep reflexes were normal. The gag reflex was present. Initial laboratory data included hemoglobin level 12 gm. per 100 cc. and white blood cell count 9,200 per cubic millimeter. The peripheral smear showed normocytic, normochromic red blood cells, adequate platelets, and no atypical cells. There were 75 polymorphs, 23 lymphocytes, and 2 monocytes per cubic millimeter. The urine was clear. Urinalysis showed no sugar, acetone, albumin, or bile. Microscopic examination of the sediment showed nothing abnormal.

While in the hospital, the patient received oxygen by mask, and her blood was typed and cross matched. A culture of the blood was made. She was then given 300,000 units of aqueous crystalline penicillin, 600,000 units of aqueous procaine penicillin, and 1 gm. of streptomycin, intramuscularly. An infusion of 2,000 cc. of isotonic sodium chloride solution containing 5% dextrose and water-soluble vitamins was given slowly during the first 24 hours. Intramuscular injections of 600,000 units of aqueous procaine penicillin once per day and 1 gm. of streptomycin twice per day were continued. The patient's blood pressure was low for the first 48 hours, with blood pressure readings varying from 70/40 to 100/52 mm Hg. Intramuscular injections of 5 mg. of phenylephrine (Neo-Synephrine) hydrochloride were given whenever the systolic blood pressure dropped below 80 mm. Hg.

From the University Division Medical Service, the Kings County Hospital.

Drs. Martin Metz, Jacques Squillace, and Seymour Cutler assisted in the management of the patient.

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[2] (*a*) Eckenhoff, J. E.; Hoffman, G. L., and Dripps, R. D.: N-Allyl-Normorphine: An Antagonist to the Opiates, Anesthesiology **13**:242 (May) 1952. (*b*) Eckenhoff, J. E.; Elder, J. D., and King, B. D.: The Effect of N-Allyl-Normorphine in Treatment of Opiate Overdose, Am. J. M. Sc. **222**:115 (July) 1951. Eckenhoff, J. E.; Elder, J. D., Jr., and King, B. D.: N-Allyl-Normorphine in the Treatment of Morphine or Demerol Narcosis, ibid. **223**:191 (Feb.) 1952.

[3] (*a*) Fraser, H. F.; Wikler, A.; Eisenmann, A. J., and Isbell, H.: Use of N-Allylnormorphine in Treatment of Methadone Poisoning in Man, J. A. M. A. **148**:1205 (April 5) 1952. (*b*) Chase, H. F.; Boyd, R. S., and Andrews, P. M.: N-Allylnormorphine in Treatment of Dihydromorphinone and Methorphinan Overdosage, ibid. **150**:1103 (Nov. 15) 1952. (c) Bornstein, M.; Yorburg, L., and Johnston, B.: N-Allylnormorphine in Treatment of Methorphinan (Dromoran) Hydrobromide Poisoning, ibid. **151**:908 (March 14) 1953. (*d*) Domino, E. F.; Pelikan, E. W., and Traut, E. F.: Nalorphine (Nalline) Antagonism to Racemorphan (Dromoran) Intoxication, ibid. **153**:26 (Sept. 5) 1953.

Twelve hours after admission, the temperature rose to 101.4 F. Another blood culture was made. A 12 lead electrocardiogram showed a sinus tachycardia at a rate of 100 per minute. The temperature remained at levels of 100.6 to 101.4 F for the first three days after admission and then became normal. About 24 hours after admission, a roentgenogram of the chest was taken (fig. 1). It was interpreted as showing bilateral, moderately extensive, symmetric, confluent areas of bronchopneumonic infiltration. The patient, clinically, had faint basal rales posteriorly at this time.

On the third day, the blood urea nitrogen was 24 mg. per 100 cc.; the fasting blood sugar level was 73 mg. per 100 cc.; and reaction to the Mazzini test was negative. The two blood cultures made previously showed no growth. The initial vomitus and urine specimens were reported as containing barbiturates (qualitative test). No attempt was made to identify heroin in the urine. On the fifth day after admission, the patient was afebrile, felt well, and was ambulatory. A repeat chest film (fig. 2) showed marked clearing of the bronchopneumonic infiltrations. Administration of the antibiotics was discontinued. The patient was discharged to the custody of the police department seven days after admission.

COMMENT

The use of nalorphine in this case was probably a lifesaving measure in view of the poor initial response to treatment in the respirator. The finding of barbiturates in the vomitus and in the urine was not surprising as they are sometimes used to adulterate narcotics.[4]

It appeared that the presenting symptoms of coma, respiratory arrest, and pinpoint pupils were mainly caused by heroin. It is possible that part of the picture of coma, the prolonged hypotension and the lethargy, may have been attributable to the barbiturates. Nalorphine probably did not reverse the effects of the barbiturates; the literature reports that it is ineffective in dealing with barbiturate toxicity.[2a] Dulfano, Mack, and Segal[5] however, have reported some success in combating the barbiturate induced respiratory depression by [illegible] (35 to 40 mg. doses of nalorphine). Dulfano and co-workers[5] postulated that the mechanism of action of nalorphine was to stimulate the nervous system directly, particularly the respiratory center, and thereby to elevate the threshold of the center to depression by morphine. A competitive displacement between nalorphine and morphine in the enzyme-coenzyme systems affecting the central nervous system was offered as a possibility.

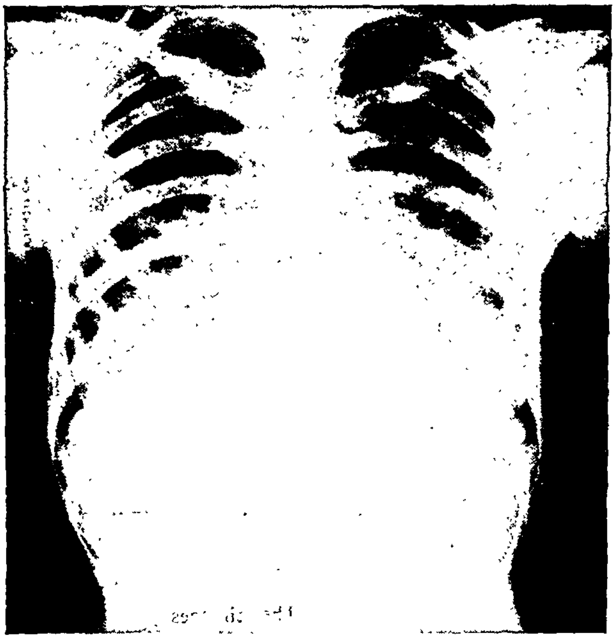

Fig. 1.—Roentgenogram showing bilateral, moderately extensive, symmetric, confluent areas of bronchopneumonic infiltration in patient with acute [illegible] intoxication.

Nalorphine administered intravenously in 5 to 10 mg. doses to adults suffering from poisoning with morphine or its derivatives appears to be a therapeutic and safe dose. It may be repeated in 10 to 15 minutes, if adequate respiratory stimulation is not obtained. The effect lasts for 2 to 3 hours. It may be administered intramuscularly or subcutaneously, but, when rapid action is necessary, the intravenous route is preferred.

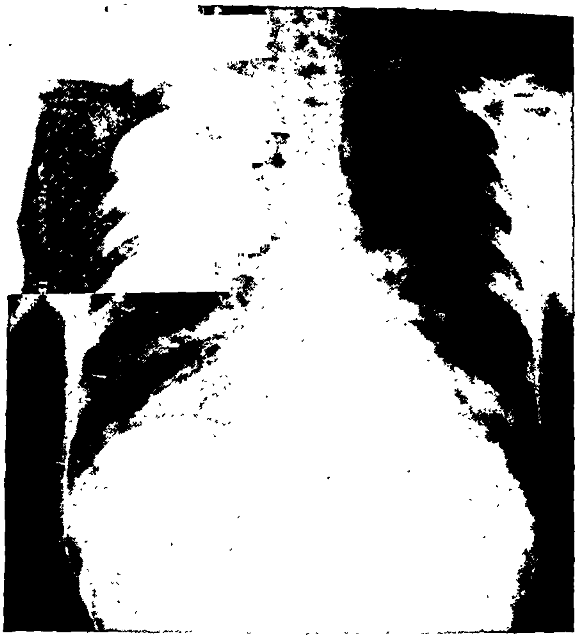

Fig. 2.—Roentgenogram showing marked clearing of bronchopneumonic infiltrations after administration of aqueous crystalline and aqueous procaine penicillin and streptomycin in same patient as in figure 1.

SUMMARY AND CONCLUSIONS

A case of acute heroin intoxication, with respiratory arrest treated initially with nalorphine (Nalline) hydrochloride, is reported. It appears that the toxic effects of heroin, as well as those of many other narcotics, can be reversed by administration of nalorphine.

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Rectal Examination in General Practice.—One of the most important maneuvers that the general practitioners should learn is to make a rectal examination with a minimum of discomfort to the patient, and at the same time gain a maximum amount of knowledge about the rectal condition. While proctologists feel that no rectal examination is complete without a sigmoidoscopic examination, followed, if indicated, by roentgenological studies, nevertheless, rectal examination, as it can be performed without special instruments, is often of great value and should not be omitted in a general physical examination.—*S. B. Kleiner, M.D., Rectal Examination in General Practice, Connecticut State Medical Journal,* August, 1953.

NERVOUS SYSTEM DAMAGE FOLLOWING PARAVERTEBRAL BLOCK WITH EFOCAINE

REPORT OF THREE CASES

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L. N. Berlin, M.D.
and
H. G. Wolff, M.D., New York

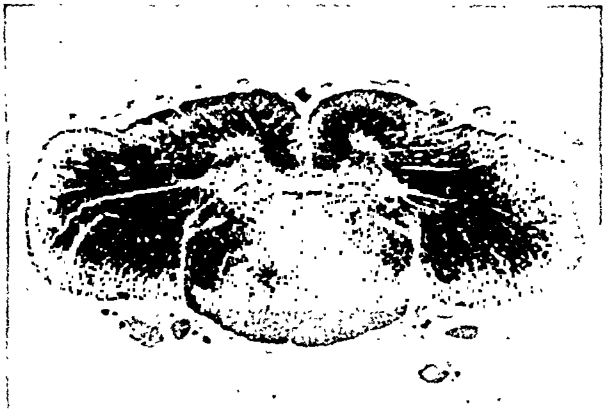
It has recently become well recognized that anesthetic agents injected into the subarachnoid space may damage nervous tissue[1] and cause meningeal irritation manifested by pleocytosis and increased protein in the spinal fluid.[2] Light and co-workers inferred that "probably there is in every case some toxic reaction produced in nervous tissue by the agents used for spinal anesthesia . . ."[3] Neurological sequelae of spinal anesthesia are sometimes severe and apparently permanent.[4] An almost unavoidable hazard of paravertebral nerve block is inadvertent injection of the agent used into the subarachnoid space.[5] This probably occurs because of an outward prolongation of the subarachnoid space or in other instances because of movement of the patient and tearing of the tissues after the needle is in place. At least one case of severe spinal cord damage following a paravertebral block has been reported.[6]

Efocaine is a relatively new anesthetic agent that offers the advantage of producing a much more prolonged local anesthesia than the usual agents.[7] It contains 1% procaine, 0.25% procaine hydrochloride, and 5% butyl-*p*-aminobenzoate in a solvent consisting of 2% polyethylene glycol-300, 78% propylene glycol, and water. Athough in preliminary animal experiments fibrous reaction was noted around nerve bundles after local injections of Efocaine,[8] it has been considered safe for use in paravertebral nerve blocks.[7] A recent report,[9] however, noted one instance of transverse myelitis and one of hemianhidrosis following similar blocks with Efocaine.

REPORT OF CASES

CASE 1.—A 63-year-old white man was given a paravertebral block with Efocaine from the fifth to the eighth dorsal segments on the left at the New York Hospital, on Jan. 10, 1953, because of chest pain associated with widespread inoperable thoracic carcinoma. There were no evidences of spinal metastases. Neurological examination on hospital admission revealed no defect. About two hours after the block the patient complained of inability to move his left leg. He soon noted weakness of his right leg and fecal incontinence, and a Foley catheter had to be used for urinary retention. When examined the next day, he was noted to have an incomplete transverse myelitis at about the fourth dorsal level. Thereafter he remained bedridden because of paraplegia, which improved only minimally.

Examination two and one-half months after the nerve block revealed severe weakness of the left leg, with increased resistance to passive motion and hyperactive deep tendon reflexes. On attempts to move the left leg, he reported "electrical shocks" through it. The left abdominal reflex was decreased. The right leg was also very weak. There was impairment of position sense in the toes of both feet and diminished perception of vibration from the iliac crest down on the left side and in the toes of the right foot. There was a band of decreased perception of pin and cotton between the fifth and eighth dorsal dermatomes on the left. Both plantar responses were equivocal. Sphincter function was intact, having been recovered about one and one-half months after the nerve block.



Loyez myelin sheath stain of the spinal cord at approximately the fourth dorsal level.

The patient died on April 18 after a gradually progressive downhill course characterized by deepening icterus. Autopsy revealed carcinoma of the pancreas, with widespread metastases but none affecting the cord. Examination of the spinal cord with Loyez myelin sheath stain demonstrated striking degeneration of the gracilis column and to a lesser extent of the peripheral layers of the cord (figure). The [illegible] were present in the thoracic region and extended to the cerv[illegible]vel.

CASE 2.—A 25-year-old wh[illegible] week intrauterine pregnancy, rhe[illegible] mitral stenosis, and an enlarged hear[illegible] commissurotomy at the [illegible] York Hospital [illegible] The left auricle was no[illegible] be free of thrombi. As a [illegible] post-operative measure she received a paraverte[illegible] with Efocaine from the second to the sixth dorsal level on the left [illegible] (2 cc. for each nerve) before leaving the [illegible] room. [illegible] days [illegible] she complained of severe weak[illegible] legs.

F[illegible] five days postoperatively [illegible] severe weakness [illegible] slight weakness of the [illegible] leg, impaired recognition of [illegible] from the level of the fourth dorsal dermatom[illegible] bilaterally impair[illegible] being more [illegible]

From the New York Hospital and the departments of medicine (neurology) and psychiatry, Cornell University Medical College, New York, and the Veterans Hospital, Kingsbridge Road, Bronx, N. Y.

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pronounced on the left), slight diminution of position sense in the toes of the left foot, and inability to void spontaneously.

She improved slowly and steadily thereafter, so that when last seen a month later sphincter function had returned and she could walk unaided with only slight difficulty. Examination at this time revealed slight weakness of the left leg, and hyperreflexia of both lower extremities. The hyperreflexia was more evident on the left, where there was a positive toe stretch response, unsustained ankle clonus, and an extensor plantar response. Rapid rhythmic alternating movements were impaired in the left leg; the left abdominal reflex was absent. There was diminished sensation to pin and cotton below the sixth dorsal level bilaterally that was slightly more pronounced on the left. Position and vibration sense were intact.

CASE 3.—A 40-year-old white man had the upper lobe of the right lung removed for pulmonary tuberculosis at the Castle Point Veterans Hospital on Jan. 2, 1953. At the conclusion of the operation the second through the ninth intercostal nerves on the right were each blocked with 2 cc. of Efocaine. Upon first regaining consciousness, the patient complained of inability to move his right leg. Within the next few days complete paralysis of this leg developed with a marked paresis of the left lower extremity and loss of anal, rectal, and bladder control and sensation. About one week after the operation he began to improve, and had continued to improve very slowly to the time of writing. Three lumbar punctures revealed no remarkable findings save for protein levels of 50, 90, and 52 mg. per 100 cc.

He was transferred to the Bronx Veterans Hospital for neurological opinion. Here, examination about one and one-half months after the accident revealed absent abdominal and cremasteric reflexes, weakness of the right abdominal musculature, almost complete paralysis of the right lower extremity with increased resistance to passive motion, and slight weakness of the left lower extremity. Knee and ankle jerks were hyperactive bilaterally: there was an extensor plantar response bilaterally that was more easily elicited on the right. Sustained patellar and ankle clonus was present on the right, with unsustained ankle clonus on the left. There was decreased recognition of pin, cotton, and temperature stimuli from the nipple line down on the right and from the costal margin down on the left. This loss was more conspicuous on the right side. There was severe decrease of position and vibration sense in the right lower extremity and slight diminution of vibration in the left leg. During the ensuing month the patient regained anal and rectal sensation and control. When transferred back to the Castle Point Veterans Hospital two and one-half months after operation, he was just beginning to become aware of bladder fulness. Final diagnosis was myelopathy secondary to Efocaine.

COMMENT

These three patients were called to our attention within a period of less than two months. In two of them the "blocks" were accomplished by fully trained anesthesiologists. It seems highly likely that in each case some Efocaine permeated the subarachnoid space and was there absorbed to cause local myelopathy.

SUMMARY AND CONCLUSIONS

Three patients with evidence of spinal cord damage following paravertebral thoracic nerve block with Efocaine are reported on. In one, postmortem findings demonstrated extensive damage to the periphery of the cord and dorsal columns. Paravertebral nerve block carries dangers of damage to nervous tissue that are related to those of spinal anesthesia but not so great. Efocaine is not a safe agent for use in paravertebral nerve blocks.

525 E. 68th St. (Dr. Wolff).

PHRENICECTOMY AS AID TO REPAIR OF LARGE ABDOMINAL HERNIAS

Arthur S. W. Touroff, M.D., New York

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REPORT OF A CASE

A 60-year-old man first consulted me on May 13, 1953, because of a large, slowly developing right-sided abdominal mass of 30 years' duration. The diagnosis of congenital right inguinal hernia had been made shortly after birth. The mass remained essentially unchanged in size for approximately 30 years. Soon thereafter, it began to enlarge slowly but progressively. It first descended into the scrotum but, at the end of five years, began to extend in an upward direction over Poupart's ligament. Thereafter, it enlarged steadily upward and laterally upon the abdominal wall to form a prominent, somewhat irregular superficial mass that covered the right lower and lateral abdominal areas and the right thigh.

As the mass became larger, the patient began to experience "dragging" pain and "heaviness" in the lower abdomen. During the last 10 years he experienced increasing discomfort while sitting, especially while at work as a sewing machine operator. As the abdominal component of the mass increased in size, it became increasingly noticeable beneath his clothing, which had to be let out progressively. He did not consult a physician at any time for fear that operation would be advised, but finally sought medical advice because the abdominal discomfort handicapped him in his work.

His medical history included removal of a cataract from the right eye six years previously and recurrence of seasonal hay fever for the last 35 years. On physical examination, the patient was well developed and nourished. The relevant physical findings were confined to the local area where a large, irregular, superficial mass covered the right lower and lateral abdominal wall and the right thigh. The uppermost portion of the mass was situated well out in the right flank, at a level 2 in. (5.08 cm.) above that of the umbilicus. From there, it extended downward and mesially for a distance of 16 in. (40.64 cm.) to the bottom of the distended scrotum. It measured a little more than 8 in. (20.32 cm.) in its widest transverse diameter and protruded about 8 in. above the level of the surrounding abdominal wall (fig. 1). The mass was covered by thin, tightly stretched skin and was fluctuant in various areas.

The bulk of the lesion was slightly movable, but the lower portion was somewhat fixed in the inguinal region. In the latter area, the deep surface of the mass could be traced to a widely dilated, external ring that measured about 3½ in. (8.89 cm.) in diameter. The right testis could not be felt. The impression gained was that the lesion was a congenital inguinal hernia that had descended into the scrotum and then turned upward, superficial to Poupart's ligament, to spread out over the abdominal wall beneath the skin and subcutaneous tissues.

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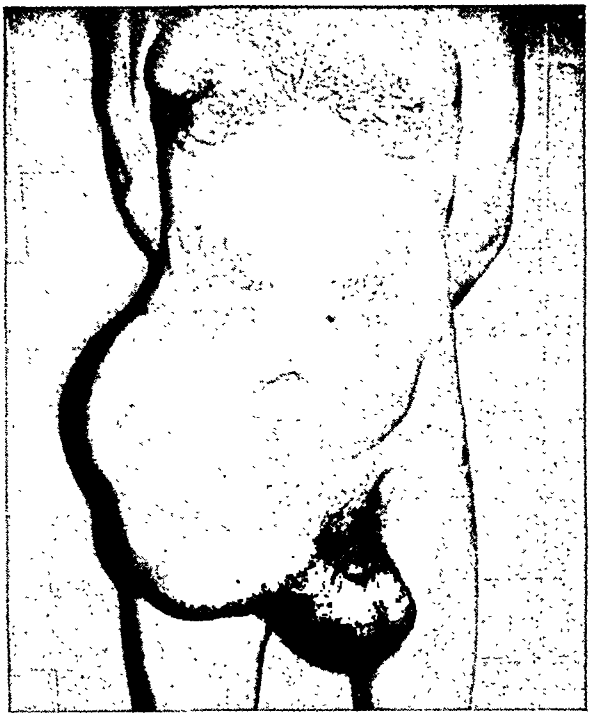

Fig. 1.—Preoperative appearance of hernial mass that has spread upward and laterally from inguinal region to overlie the entire right lower and lateral abdominal wall and the right thigh.

On May 27, right hernioplasty and orchidectomy were performed with combined thiopental (Pentothal) sodium and spinal anesthesia. A 10 in. (25.4 cm.) right inguinal incision was made over the mass and the sac exposed and dissected away from the surrounding tissues. The sac was opened and a large amount of thin, straw-colored fluid aspirated. After the latter had been accomplished, the sac was opened widely. It contained a large mass of thickened, hypertrophic large bowel and indurated, congested mesocolon and omentum that were firmly adherent to the interior of the sac. An extensive collateral network of distended blood vessels extended between the adherent bowel and omentum and the interior of the sac. The right testis was intimately adherent to the outer aspect of the sac close to the uppermost portion of the latter. From there, the thickened spermatic cord pursued a tortuous downward and mesial course, on the sac, to the bottom of the scrotum. It then turned upward and passed through the external inguinal ring, mesial to the neck of the sac. The inguinal ring was approximately 3½ in. in diameter; its margins were firm and well defined.

The inguinal canal was opened in the usual manner and the neck of the sac isolated. The contents of the sac were freed, and as much of the indurated omentum as possible was excised. The bowel and mesocolon then were replaced in the abdomen with ease, and the sac was excised as were the testis and tortuous spermatic cord. (Orchidectomy was done to insure complete closure of the hernial defect.) The neck of the sac was closed with continuous silk sutures. The transversalis fascia was plicated with interrupted sutures and a typical Andrews-Bassini repair performed. The large mass of redundant skin and subcutaneous tissue that formerly covered the hernial mass was excised, and the edges of the wound were united with interrupted silk sutures. A cigarette drain was placed beneath the suture line and brought out through the upper angle of the wound. A similar drain was brought out through a stab wound made in the most dependent portion of the right scrotal sac.

The postoperative course was relatively uneventful, except for the development of partial atalectasis of the left lower lobe following the phrenicectomy. The patient was permitted out of bed on the second day after operation. The dead space beneath the suture line obliterated slowly, and, because of a tendency for fluid to collect, the drains were kept in place for more than three weeks. At the time of the patient's discharge from the hospital on June 26, the wound was firmly healed (fig. 3). Since then, the patient has remained entirely free of symptoms.

COMMENT

The normally yielding walls of the abdominal cavity permit the capacity of that structure to vary in accordance with changes in the volume of its contents. Thus, in the presence of marked ascites or a massive intra-abdominal tumor, the peritoneal cavity is capable of substantial enlargement. Conversely, the peritoneal cavity may become significantly smaller after a large mass of intra-abdominal viscera have escaped through a hernial defect, especially if the latter is of long standing. Under such circumstances, an attempt at sudden replacement of the herniated visceral mass into the shrunken abdominal cavity, during the course of hernial repair, may be exceedingly difficult or even impossible. Such a problem is encountered not infrequently in attempting to repair a massive omphalocele or a large congenital diaphragmatic hernia in an adult. In the former instance, the operation sometimes is performed in two stages. The first stage consists merely of closing the skin over the visceral protrusion. After the peritoneal cavity enlarges sufficiently to accomodate the replaced mass of viscera,

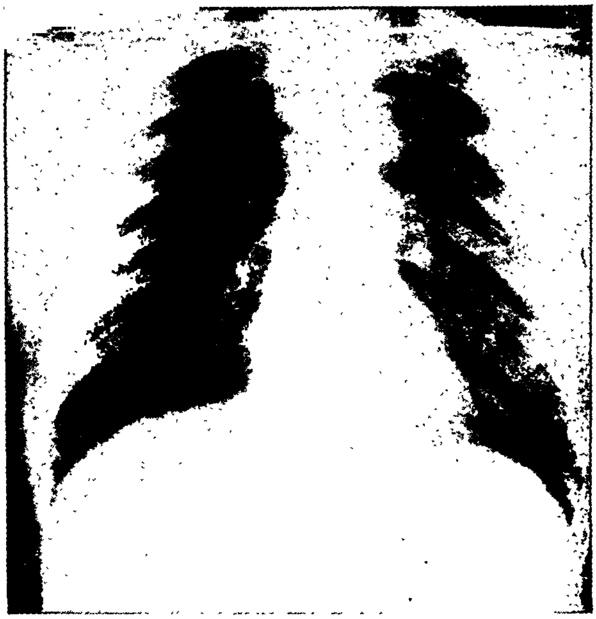

Fig. 2.—Preoperative film of chest showing left side of diaphragm at level of 10th rib, laterally.

pronounced on the left), slight diminution of position sense in the toes of the left foot, and inability to void spontaneously.

She improved slowly and steadily thereafter, so that when last seen a month later sphincter function had returned and she could walk unaided with only slight difficulty. Examination at this time revealed slight weakness of the left leg, and hyperreflexia of both lower extremities. The hyperreflexia was more evident on the left, where there was a positive toe stretch response, unsustained ankle clonus, and an extensor plantar response. Rapid rhythmic alternating movements were impaired in the left leg; the left abdominal reflex was absent. There was diminished sensation to pin and cotton below the sixth dorsal level bilaterally that was slightly more pronounced on the left. Position and vibration sense were intact.

Case 3.—A 40-year-old white man had the upper lobe of the right lung removed for pulmonary tuberculosis at the Castle Point Veterans Hospital on Jan. 2, 1953. At the conclusion of the operation the second through the ninth intercostal nerves on the right were each blocked with 2 cc. of Efocaine. Upon first regaining consciousness, the patient complained of inability to move his right leg. Within the next few days complete paralysis of this leg developed with a marked paresis of the left lower extremity and loss of anal, rectal, and bladder control and sensation. About one week after the operation he began to improve, and had continued to improve very slowly to the time of writing. Three lumbar punctures revealed no remarkable findings save for protein levels of 50, 90, and 52 mg. per 100 cc.

He was transferred to the Bronx Veterans Hospital for neurological opinion. Here, examination about one and one-half months after the accident revealed absent abdominal and cremasteric reflexes, weakness of the right abdominal musculature, almost complete paralysis of the right lower extremity with increased resistance to passive motion, and slight weakness of the left lower extremity. Knee and ankle jerks were hyperactive bilaterally: there was an extensor plantar response bilaterally that was more easily elicited on the right. Sustained patellar and ankle clonus was present on the right, with unsustained ankle clonus on the left. There was decreased recognition of pin, cotton, and temperature stimuli from the nipple line down on the right and from the costal margin down on the left. This loss was more conspicuous on the right side. There was severe decrease of position and vibration sense in the right lower extremity and slight diminution of vibration in the left leg. During the ensuing month the patient regained anal and rectal sensation and control. When transferred back to the Castle Point Veterans Hospital two and one-half months after operation, he was just beginning to become aware of bladder fulness. Final diagnosis was myelopathy secondary to Efocaine.

COMMENT

These three patients were called to our attention within a period of less than two months. In two of them the "blocks" were accomplished by fully trained anesthesiologists. It seems highly likely that in each case some Efocaine permeated the subarachnoid space and was there absorbed to cause local myelopathy.

SUMMARY AND CONCLUSIONS

Three patients with evidence of spinal cord damage following paravertebral thoracic nerve block with Efocaine are reported on. In one, postmortem findings demonstrated extensive damage to the periphery of the cord and dorsal columns. Paravertebral nerve block carries dangers of damage to nervous tissue that are related to those of spinal anesthesia but not so great. Efocaine is not a safe agent for use in paravertebral nerve blocks.

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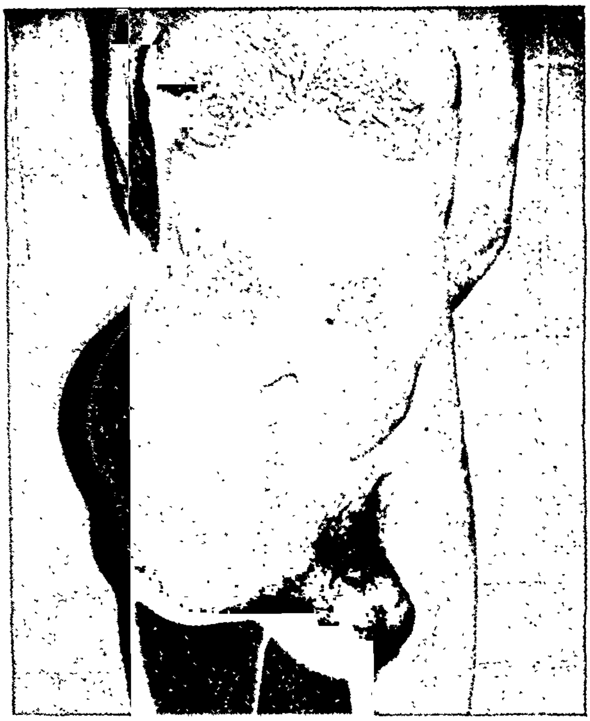

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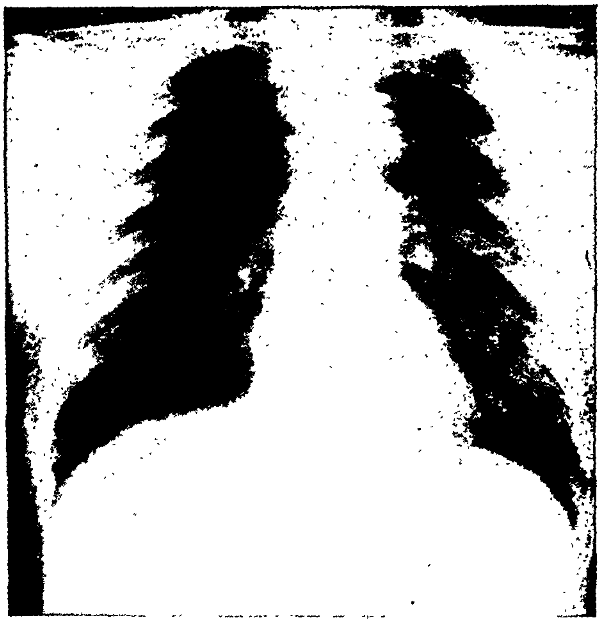

Fig. 2.—Preoperative film of chest showing left side of diaphragm at level of 10th rib, laterally.

warts developed following service in the Far East is to us proof of the infectious nature of the disease and its mode of transmission.

SUMMARY

The incidence of genital warts at Camp Atterbury, Indiana, has been exceedingly high. The data reported point to sexual intercourse as the mode of transmission of the virus producing genital warts. This seemingly justifies the classification of genital warts (condyloma accuminata, verruca accuminata) as a venereal disease.

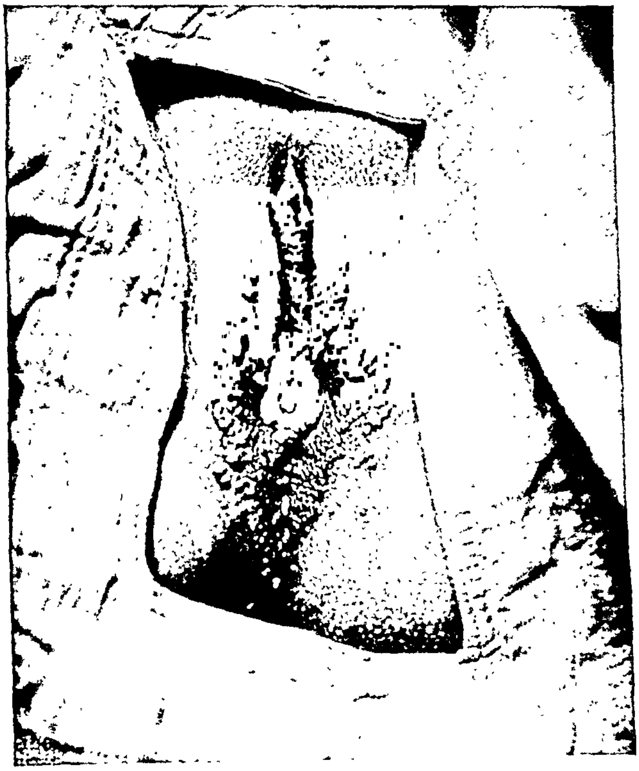

Fig. 2.—A typical lesion found in women with genital warts before treatment.

[illegible] nerve.

The Cause of Hypertension.—Temporarily or perma- strident conflicts of inv[illegible]paralysis and elevation of the and the babel of [illegible] in turn immediately increases the capacity of the abdominal cavity. Thus, phrenic interruption constitutes an extremely effective method of facilitating operative repair of any large abdominal hernia when the abdominal cavity has shrunken as the result of long-standing, massive displacement of viscera into an extra-abdominal hernial sac. In the case reported, the hernia was so large and of such long duration that operative repair in one stage appeared almost impossible. Accordingly, an attempt to enlarge the abdominal cavity by left phrenicectomy appeared worthy of trial. The success of the procedure was quickly demonstrated by a noticeable reduction in the size and tenseness of the hernial mass. Roentgenographic evidence of enlargement of the peritoneal cavity was subsequently afforded by comparing the chest films taken before and after phrenicectomy. The preoperative films revealed the left diaphragm situated at the level of the [illegible] rib later-

EXTENSION TRACTION WITH PERFORATED FOAM RUBBER STRIPS

Maurice Gershman, M.D., Far Rockaway, N. Y.

The application of perforated foam rubber strips with rayon or drill cloth backing to an extremity is a type of extension traction that I have found to be simple and easy to apply. Foam rubber consists of an infinite number of air bubbles in a matrix of rubber. As this mass is sliced longitudinally, there is created a gripping surface consisting of many concavities with rubber septums. Perforations made in the rubber permit an even better grip on the surface and allow air to reach the skin. The septums act as treads against the skin and hair. Hair acts advantageously when foam rubber is used, in contrast to the discomfort it causes when adhesive plaster is used. The foam rubber is held snugly and smoothly against the skin by an elastic bandage. No shaving or other preparation of the skin is required.

This method is particularly useful in applying traction to the limbs of elderly patients who have thin atrophic skin of poor quality, and it is excellent for use after hip surgery when traction is to be maintained only until a brace can be applied. Its ease of removal and reapplication make it particularly useful while measurements and fittings of a brace are being carried out. When bilateral traction is being used in the conservative management of the acute herniated disk these foam rubber strips can be readily removed and reapplied to facilitate examination of the patient. This would allow bathroom privileges if the traction did not have to be applied continuously. Its use as traction in the guillotine amputation is recommended. Up to 10 lb. (4.5 kg.) of traction has been used for short periods without slipping.

A spreader, consisting of a square wooden block, is used as in other forms of skin traction, to prevent compression of the skin over the bony prominences. The directions for application of this type of traction are as [illegible] the eye hook of the spreader through [illegible] center of the perforated foam rubber

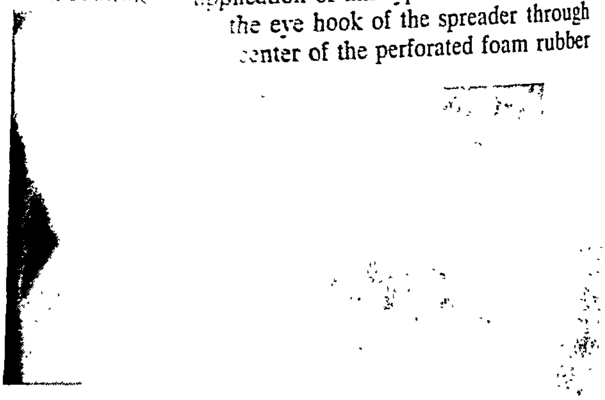

Fig. 4.—Postop diaphragm at level

was achieved b
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long duration.

994 Fifth Ave. (28).

hold the strip securely. 5. Tie the rope to the eye hook of the spreader, and then attach the proper weights, through a pulley if possible, for traction.

Up to the present moleskin has been advised as the best material for skin traction, but I believe that foam rubber has the following advantages over moleskin. 1. Moleskin tends to deteriorate in warm weather. 2. Some type of adherent substance must be painted on the skin when using moleskin. 3. Glue tends to harden, and frequently excoriation and blistering occurs. 4. Preparation of the skin consisting of shaving followed by thorough cleansing with alcohol and ether is needed before glue is applied. This procedure is time consuming and requires trained personnel to be in attendance. 5. Foam rubber can be sterilized in an autoclave for use over compounded areas, and it can be washed for reuse.

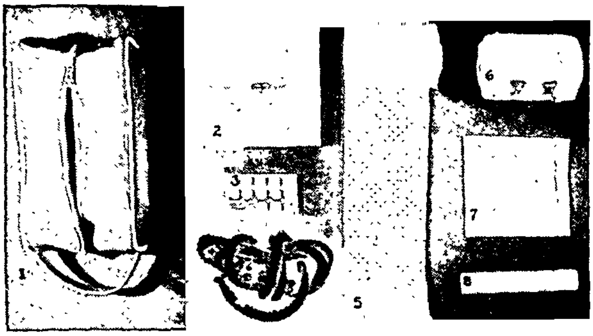

Fig. 2.—1. Trac-Kit (holding all contents). 2. Spreader with eye hook. 3. Thumb tacks. 4. Three feet of clothes line cord. 5. Perforated foam rubber strip with drill cloth backing. 6. Three inch elasticized bandage. 7. Sterile gauze pad. 8. Four inch dowel for hand grip.

We first used foam rubber that was adherent to the regular broadloom carpeting, but now foam rubber of ⅛ in. thickness has become a universal material and can be attached to almost any backing material that can be perforated. It has a wide field of application in the realm of public safety during national emergencies, as it can easily be placed in a first aid kit (fig. 2) and applied by inexperienced persons, if necessary.

1210 Cornaga Ave.

Female Surgical Patients.—One of the largest groups of neglected patients is made up of women who have been operated on. A surgeon usually makes rounds rather hurriedly and discharges his patient while he is on his feet. That is poor technique. Most women have a lot of worries that have been bothering them and cannot bring themselves to ask questions of a man in a hurry. That can be easily corrected. A couple of days before contemplated discharge from the hospital, tell the patient to get a big piece of paper and a pencil, and put down and number all the questions regarding her health that have disturbed her. . . . When the surgeon is ready to send the patient home, he should sit down with the list in hand and discuss each of the items enumerated. They can usually be disposed of to the satisfaction of the patient. He should give specific instructions regarding domestic work, sex life, and driving automobiles. Cancerphobia must be firmly removed. A surgeon's job, however skillful his operating, is not complete until he has set his patient's mind at rest.—R. T. Richards, M.D., Surgeons and Neuroses, *The American Surgeon*, September, 1953.

GOUT IN A NEGRO WOMAN

REPORT OF A CASE

Harry Bartfeld, M.D., New York

Gout is a disease rarely seen in women; about 98% of all cases are in men. It is said to occur infrequently in Negroes, but cases appear especially in clinics where a large number of Negroes are in attendance. It was never reported as appearing in a Negro woman until 1953.[1] This case meets the criteria for gout particularly for clinical signs, hyperuricemia, and identification of uric acid tophi. The case being presented here is that of a Negro woman who has had gout over a period of six years.

REPORT OF A CASE

On May 27, 1952, at the age of 60 a Negro woman was admitted to Bellevue Hospital complaining of painful swelling of the left ankle and left great toe for two weeks and painful swelling of the right ankle and right great toe for four days. She added that at one time white cheesy material ("worms") was discharged from the left toe. In addition, she complained of dizziness and dyspnea. This was her second attack of acute gout; the first occurred five years before beginning in her right ankle and then involving her right great toe; it was so severe that she could not walk. Two years before admission, she was discovered to be hypertensive, and symptoms of dyspnea and orthopnea developed for which she received digitalis and meralluride (Mercuhydrin) sodium. In 1936, she was admitted to Bellevue Hospital for right shoulder and back pain. A roentgenogram taken then showed osteoarthritic changes of the lumbar vertebrae. At that time, she was drinking to excess. There was no history of venereal disease. Her menses stopped in 1928. Her family history indicated that neither her father nor her mother had gout. Of her five brothers and two children, none ever had gout.

Physical examination revealed a well-nourished woman who appeared chronically ill. The head had no abnormalities, except for healed scars of an old burn over the nose and cheeks. One breast had keloid scars. The lungs were normal, except for decreased breath sounds and decreased resonance of right base. The heart was enlarged to the left on percussion; the pulse rate and the ventricular rate were 80; and the blood pressure was 104/84 mm. Hg. The abdomen was soft; the liver edge was palpable just below the costal margin; and no masses were palpated. The limbs showed no cyanosis, and there was no clubbing of the extremities. The ankles were tender, warm, and swollen, and motion was painful. The metatarsophalangeal joints of both great toes were swollen, tender, and painful on motion. There was moderate bilateral hallux valgus. Roentgenograms of the hands, feet, and ankles showed generalized osteoporosis. In addition, roentgenograms of the feet showed changes typical of gout, namely, cresentic irregular destructive erosions between the first cuneiform and first metatarsal bones together with destructive areas in the heads of the first metatarsal and other metatarsal bones. There were also severe productive changes (figure)

Laboratory examination showed a moderate anemia; white blood cells 6,700 per cubic millimeter; sedimentation rate 74 mm. per hour; and hematocrit 36. The urine was normal except for albumin, 1+. The blood sugar was 80 mg. per 100 cc.; blood urea nitrogen 13 mg. per 100 cc.; and uric acid

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Instructor in Clinical Medicine, New York University Post-Graduate Medical School, Assistant Attending Physician, University Hospital, and Assistant Visiting Physician, Fourth Medical (N.Y.U.), Division, Bellevue Hospital

Dr. Edward F. Hartung helped in the preparation of the manuscript.

[1] Perlman, L.; Bernstein, A.; Maslow, W. C., and Scatliff, J. H.: Gout in a Negro Woman, J. A. M. A. **151:** 726-728 (Feb. 28) 1953.

the second stage, consisting of repair of the muscular and fascial defect in the anterior abdominal wall, is carried out. In the case of repair of a large diaphragmatic hernia of long standing, phrenicectomy is often performed in order to enlarge the peritoneal cavity. This may be done either at the time of diaphragmatic repair or as an independent preliminary procedure.

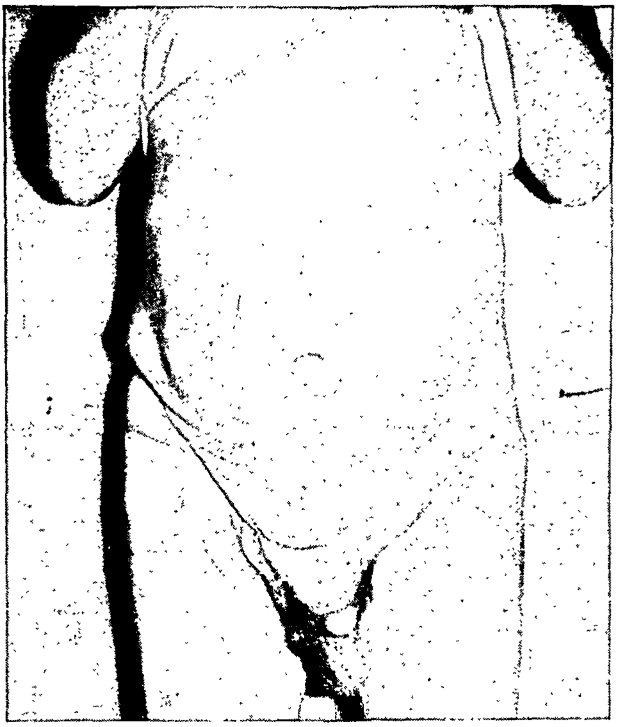

Fig. 3.—Four weeks after operation there is long operative scar and absence of previous abdominal and right scrotal masses.

Of all the structures that constitute the boundaries of the abdominal cavity, the diaphragm is the thinnest and also the most yielding. Furthermore, unlike any other large muscle, its tonus depends almost exclusively upon the integrity of a single nerve, namely the phrenic nerve. Interruption of the latter, either temporarily or permanently, results in prompt paralysis and elevation of the diaphragm, which in turn immediately increases the capacity of the abdominal cavity. Thus, phrenic interruption constitutes an extremely effective method of facilitating operative repair of any large abdominal hernia when the abdominal cavity has shrunken as the result of long-standing, massive displacement of viscera into an extra-abdominal hernial sac. In the case reported, the hernia was so large and of such long duration that operative repair in one stage appeared almost impossible. Accordingly, an attempt to enlarge the abdominal cavity by a left phrenicectomy appeared worthy of trial. The efficacy of the procedure was quickly demonstrated by a noticeable reduction in the size and tenseness of the hernial mass. Roentgenographic evidence of enlargement of the peritoneal cavity was subsequently afforded by comparing the chest films taken before and after phrenicectomy. The preoperative film revealed the left diaphragm situated at the level of the [illegible] rib laterally, while the postoperative film showed that it had risen to the level of the 6th rib (figures 2 and 4). Additional evidence of the effectiveness of the phrenic interruption was obtained by comparing the original abdominal roentgen findings with the findings at the time of hernioplasty. The former disclosed a great mass of large and small bowel within the hernial sac; the latter revealed only a long loop of proximal colon together with omentum and fluid within the sac. (This indicated that the abdominal cavity had enlarged sufficiently after the phrenicectomy to permit spontaneous reduction of a large part of the contents of the hernial sac.) Additional evidence of significant enlargement of the peritoneal cavity as a result of phrenicectomy consisted of the ease with which the bowel could be returned to the abdomen during the hernioplasty. Finally roentgen examination performed about a week prior to the patient's release from the hospital revealed the barium-filled splenic flexure of the colon to be lying at an unusually high level beneath the markedly elevated, paralyzed left side of the diaphragm.

SUMMARY AND CONCLUSIONS

A case is presented in which an interstitial, congenital, right inguinal hernia enlarged to such proportions that it covered the entire right lower and lateral abdominal wall and the upper portion of the right thigh. The mass was of such large size and long duration that the abdominal cavity appeared too small to accomodate it, if hernioplasty were performed in one stage. Radical cure was achieved by performing phrenicectomy in order to increase the capicity of the peritoneal cavity followed, two days later, by an Andrews-Bassini hernioplasty and orchidectomy. The method appears worthy of further trial in all cases of abdominal hernia of large size and long duration.

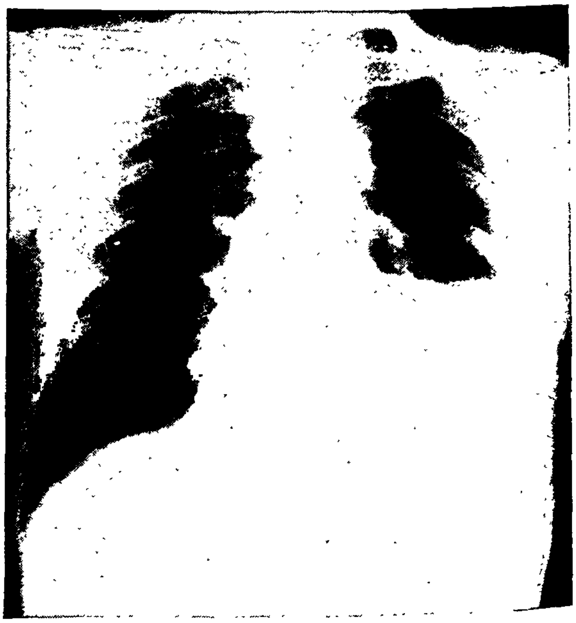

Fig. 4.—Postoperative film of chest showing paralyzed left side of diaphragm at level of sixth rib, laterally, after phrenicectomy.

994 Fifth Ave. (28).

GENITAL WARTS—A VENEREAL DISEASE

Capt. Thomas J. Barrett,
Lieut. John D. Silbar
and
Lieut. James P. McGinley, (MC), U. S. Army

The number of cases of genital warts (condyloma accuminata, verruca accuminata) has been noted to increase tremendously on the establishment of a replacement center at Camp Atterbury, Indiana. After treating approximately 50 cases of these lesions and seeing the high incidence in the troops returning from overseas compared to civilians or soldiers from the United States, we have felt that a closer evaluation should be made. After a study of 70 men and 24 women, we are making a preliminary report because we feel the medical profession should be alerted to this problem for the reasons to be discussed.

TREATMENT IN MEN

Complete studies of 70 men have been carried out (fig. 1). Of these patients, 65 had been stationed in Korea and Japan, 4 had never been out of the United States, and one was in Okinawa. All 65 patients who were in the Far East admitted contact with native women. Other venereal diseases found were syphilis in one case; gonorrhea in 12, and penile ulcerations, type unknown, in 12. Only one of these 70 men was circumcised at birth, and the type of wart was smaller and more keratotic in this patient. These patients were treated by four methods: (1) application of 20% podophyllin in tincture of benzoin; (2) application of 20% podophyllin in tincture of benzoin, followed by circumcision; (3) circumcision alone; and (4) fulguration followed by circumcision.

A total of 57 patients were treated by application of 20% podophyllin in tincture of benzoin. We have used the following technique: 20% podophyllin in tincture of benzoin was applied directly to the lesions by sterile applicator. This was allowed to dry before the foreskin was pulled forward (three to four minutes); the patient was then instructed to wash the medication off completely in exactly two hours with soap and water. Reactions from this treatment were seen in only three cases; one was due to neglect in washing, and one patient was not able to retract his foreskin to cleanse the area. A total of 28 patients were seen here with recurrences following the use of podophyllin at other Army installations. Recurrences were re-treated by this technique at this hospital one to three times, with subsequent complete disappearance of the warts. These patients are now undergoing a long term follow-up, which will be reported in the future.

Thirteen patients were treated by use of 20% podophyllin in tincture of benzoin, followed by circumcision. There were no recurrences in this group. Four patients were treated by circumcision alone. Two of these had complete disappearance of the warts, and two required podophyllin treatment after circumcision for complete eradication of the disease. Five patients were treated by fulguration with electric cautery, with complete disappearance. One patient required two treatments by this method. It is of interest that in one patient with multiple warts they disappeared spontaneously.

TREATMENT IN WOMEN

At the time of writing 24 women were under treatment for genital warts (fig. 2). They were all wives of returnees from the Far East. All of the husbands admitted having had sexual relations with native women while in Japan or Korea, and 22 of these men were under treatment for penile lesions. The remaining two men admitted having had warts while overseas. Nine of the women were pregnant, and two were within four to six weeks post partum.

The majority of these women noticed the appearance of the lesions four to six weeks after their husbands returned from the Far East. Vaginal and urethral smears have been consistently negative for the presence of gonococcic organisms, and results of serologic studies in all cases were negative.

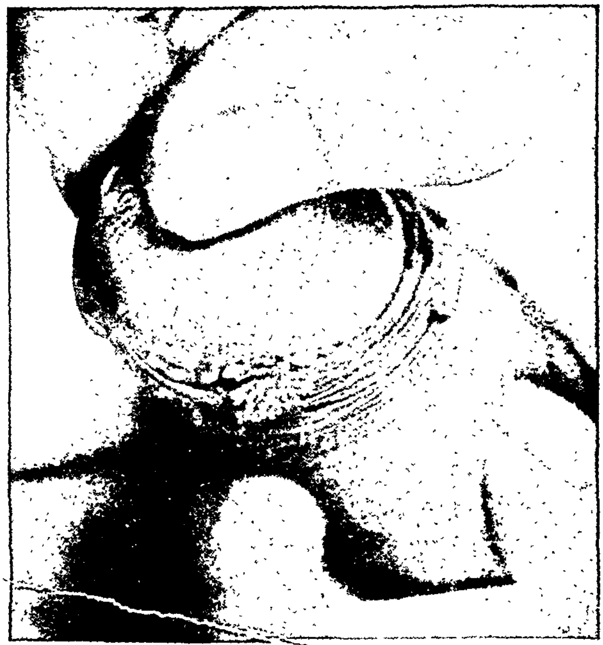
Fig. 1.—A typical lesion found in men with genital warts before treatment.

These lesions were treated by local application of podophyllin in tincture of benzoin to each individual wart. If an unsatisfactory response was obtained with this regimen, then excision of the lesions either by electrodissection or by sharp dissection was done.

COMMENT [illegible]

We have attempted to show the [illegible] relationship between sexual intercourse and genital warts. All of the consorts of the women studied had genital warts prior to the appearance of similar lesions in the women. Our data show that 66 out of 70 patients had intercourse in the Far East and the incidence of genital warts was in sharp contrast to the rarity of genital warts among troops who have never been to the Far East. The 100% incidence of genital lesions in the women in whose consorts

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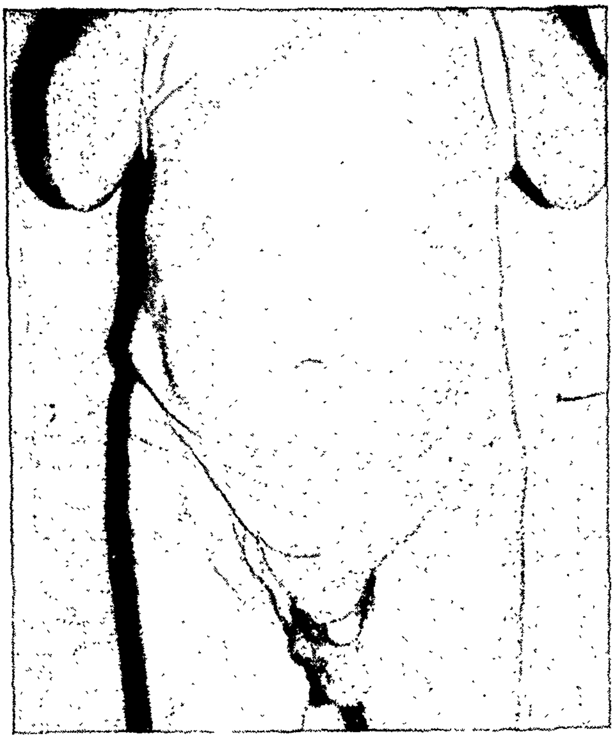
From the Sections of Obstetrics and Gynecology, Urology, and Dermatology, U. S. Army Hospital, Camp Atterbury, Indiana.

the second stage, consisting of repair of the muscular and fascial defect in the anterior abdominal wall, is carried out. In the case of repair of a large diaphragmatic hernia of long standing, phrenicectomy is often performed in order to enlarge the peritoneal cavity. This may be done either at the time of diaphragmatic repair or as an independent preliminary procedure.



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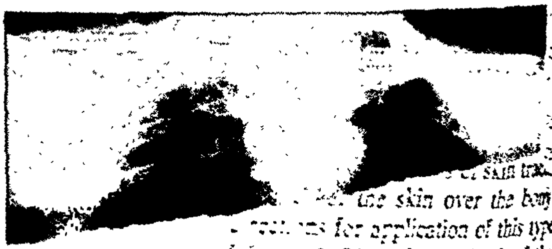

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Fig. —Application of traction to lower extremity.

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Up to the present moleskin has been advised as the best material for skin traction, but I believe that foam rubber has the following advantages over moleskin. 1. Moleskin tends to deteriorate in warm weather. 2. Some type of adherent substance must be painted on the skin when using moleskin. 3. Glue tends to harden, and frequently excoriation and blistering occurs. 4. Preparation of the skin consisting of shaving followed by thorough cleansing with alcohol and ether is needed before glue is applied. This procedure is time consuming and requires trained personnel to be in attendance. 5. Foam rubber can be sterilized in an autoclave for use over compounded areas, and it can be washed for reuse.

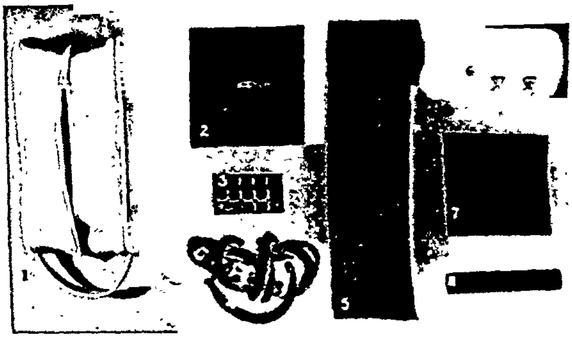

Fig. 2.—1. Trac-Kit (holding all contents). 2. Spreader with eye hook. 3. Thumb tacks. 4. Three feet of clothes line cord. 5. Perforated foam rubber strip with drill cloth backing. 6. Three inch elasticized bandage. 7. Sterile gauze pad. 8. Four inch dowel for hand grip.

We first used foam rubber that was adherent to the regular broadloom carpeting, but now foam rubber of ⅛ in. thickness has become a universal material and can be attached to almost any backing material that can be perforated. It has a wide field of application in the realm of public safety during national emergencies, as it can easily be placed in a first aid kit (fig. 2) and applied by inexperienced persons, if necessary.

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GOUT IN A NEGRO WOMAN

REPORT OF A CASE

Harry Bartfeld, M.D., New York

Gout is a disease rarely seen in women; about [illegible] of all cases are in men. It is said to occur infrequently in Negroes, but cases appear especially in clinics where a large number of Negroes are in attendance. It was never reported as appearing in a Negro woman until 1953.[1] This case meets the criteria for gout particularly for clinical signs, hyperuricemia, and identification of uric acid tophi. The case being presented here is that of a Negro woman who has had gout over a period of six years.

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On May 27, 1952, at the age of 60 a Negro woman was admitted to Bellevue Hospital complaining of painful swelling of the left ankle and left great toe for two weeks and painful swelling of the right ankle and right great toe for four days. She added that at one time white cheesy material ("worms") was discharged from the left toe. In addition, she complained of dizziness and dyspnea. This was her second attack of acute gout; the first occurred five years before beginning in her right ankle and then involving her right great toe; it was so severe that she could not walk. Two years before admission, she was discovered to be hypertensive, and symptoms of dyspnea and orthopnea developed for which she received digitalis and meralluride (Mercuhydrin) sodium. In 1936, she was admitted to Bellevue Hospital for right shoulder and back pain. A roentgenogram taken then showed osteoarthritic changes of the lumbar vertebrae. At that time, she was drinking to excess. There was no history of venereal disease. Her menses stopped in 1928. Her family history indicated that neither her father nor her mother had gout. Of her five brothers and two children, none ever had gout.

Physical examination revealed a well-nourished woman who appeared chronically ill. The head had no abnormalities, except for healed scars of an old burn over the nose and cheeks. One breast had keloid scars. The lungs were normal, except for decreased breath sounds and decreased resonance of right base. The heart was enlarged to the left on percussion; the pulse rate and the ventricular rate were 80; and the blood pressure was 104/84 mm. Hg. The abdomen was soft; the liver edge was palpable just below the costal margin; and no masses were palpated. The limbs showed no cyanosis, and there was no clubbing of the extremities. The ankles were tender, warm, and swollen, and motion was painful. The metatarsophalangeal joints of both great toes were swollen, tender, and painful on motion. There was moderate bilateral hallux valgus. Roentgenograms of the hands, feet, and ankles showed generalized osteoporosis. In addition, roentgenograms of the feet showed changes typical of gout, namely, crescentic irregular destructive erosions between the first cuneiform and first metatarsal bones together with destructive areas in the heads of the first metatarsal and other metatarsal bones. There were also severe productive changes (figure)

Laboratory examination showed a moderate anemia; white blood cells 6,700 per cubic millimeter; sedimentation rate 74 mm. per hour; and hematocrit 36. The urine was normal except for albumin, 1+. The blood sugar was [illegible] mg. per 100 cc.; blood urea nitrogen 1[illegible] mg. per 100 cc.; and uric acid

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Dr. Edward F. Hartung [illegible] in the preparation of the manuscript.

[1] Perlman, L.; Bernstein, A.; Maslow, W. C., and Scatliff, J. H.: Gout in a Negro Woman, J. A. M. A. **151**:726-728 (Feb. 28) 1953.

warts developed following service in the Far East is to us proof of the infectious nature of the disease and its mode of transmission.

SUMMARY

The incidence of genital warts at Camp Atterbury, Indiana, has been exceedingly high. The data reported point to sexual intercourse as the mode of transmission of the virus producing genital warts. This seemingly justifies the classification of genital warts (condyloma accuminata, verruca accuminata) as a venereal disease.

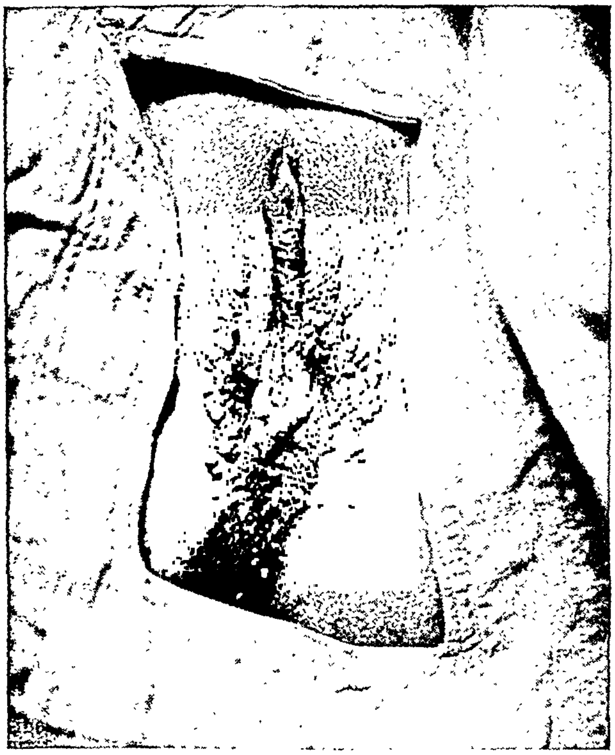


Fig. 2.—A typical lesion found in women with genital warts before treatment.

The Cause of Hypertension.—There are times when the strident conflicts of investigators, the rise and fall of theories and the babel of unsorted evidence create such a sense of confusion in a field that an atmosphere of frustration and despair prevails in which no one believes anything; this has happened to some extent in hypertension. Yet somewhere between the extreme skepticism both of the very young and of the old and tired, and the transient enthusiasms of the protagonists of this theory or that remedy, lies a middle ground of achievement and even agreement. It is generally agreed, for example, that the cause of ordinary hypertension is narrowing of the terminal vascular bed of the systemic circulation, especially the arterioles. It is also generally believed, although with some dissension, that there are three major causes of such narrowing. One is increased discharge via the sympathetic nervous system. Another is increased vasomotor tone produced either by circulating substances or by metabolic changes. A final cause is structural changes in the vessels themselves, frequently influenced at least in part by the first two factors. . . . In the ordinary hypertensive the neurogenic factor is usually the first and, as believed by some, the initiating factor in the process. *The humoral or metabolic element contributes later, when the kidney participates in the disease.* This factor accelerates the disease by increasing vasomotor tone, and, finally, the structural changes in the arterioles produced in part by these influences turn the screw tighter.—Milton Mendlowitz, M.D., The Treatment of Hypertension with Drugs, *Annals of Internal Medicine,* November 1953.

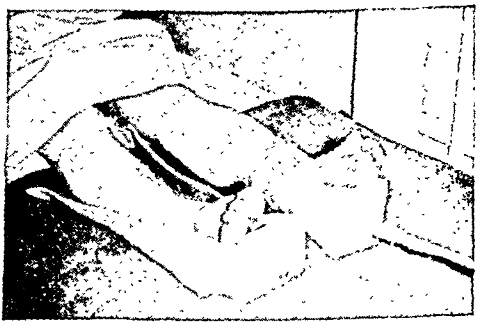
EXTENSION TRACTION WITH PERFORATED FOAM RUBBER STRIPS

Maurice Gershman, M.D., Far Rockaway, N. Y.

The application of perforated foam rubber strips with rayon or drill cloth backing to an extremity is a type of extension traction that I have found to be simple and easy to apply. Foam rubber consists of an infinite number of air bubbles in a matrix of rubber. As this mass is sliced longitudinally, there is created a gripping surface consisting of many concavities with rubber septums. Perforations made in the rubber permit an even better grip on the surface and allow air to reach the skin. The septums act as treads against the skin and hair. Hair acts advantageously when foam rubber is used, in contrast to the discomfort it causes when adhesive plaster is used. The foam rubber is held snugly and smoothly against the skin by an elastic bandage. No shaving or other preparation of the skin is required.

This method is particularly useful in applying traction to the limbs of elderly patients who have thin atrophic skin of poor quality, and it is excellent for use after hip surgery when traction is to be maintained only until a brace can be applied. Its ease of removal and reapplication make it particularly useful while measurements and fittings of a brace are being carried out. When bilateral traction is being used in the conservative management of the acute herniated disk these foam rubber strips can be readily removed and reapplied to facilitate examination of the patient. This would allow bathroom privileges if the traction did not have to be applied continuously. Its use as traction in the guillotine amputation is recommended. Up to 10 lb. (4.5 kg.) of traction has been used for short periods without slipping.

A spreader, consisting of a square wooden block, is used as in other forms of skin traction, to prevent compression of the skin over the bony prominences. The directions for application of this type of traction are as follows. 1. Place the eye hook of the spreader through a slit made in the center of the perforated foam rubber strip. 2. Use the thumb tacks to hold the strip smoothly against the covered surface and edges of the wooden spreader, and secure the tacks by encircling them and the spreader with ½ in. adhesive tape. 3. Place the spreader one inch beyond the extended limb, and hold the two free ends of the strip snugly and smoothly with the foam rubber against the skin. 4. Start the elasticized bandage at the two free ends of the strip, encircling the limb to



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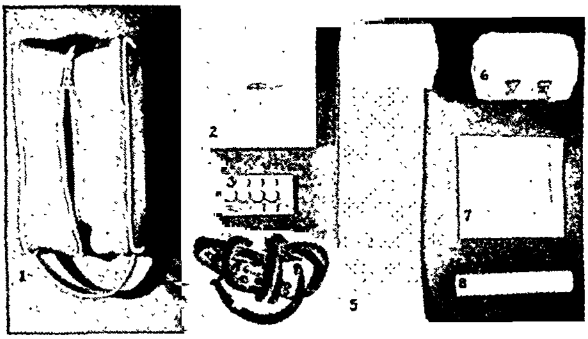

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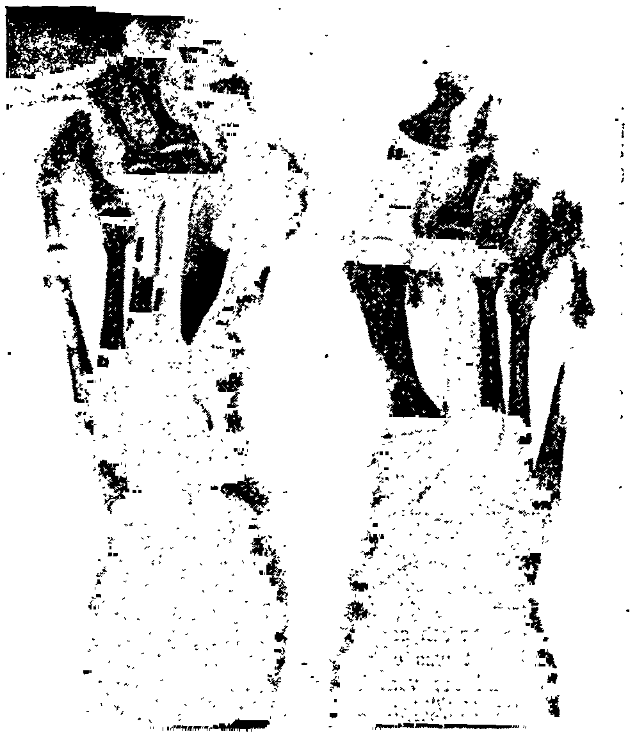
in whole blood 7 mg. per 100 cc. The uric acid value dropped to 5.1 mg. per 100 cc. The electrocardiogram showed some effect of *digitalis*.

In view of the low blood pressure and a history of hypertension, a diagnosis of Addison's disease was entertained, but laboratory studies did not verify this. The arthritis improved with rest and aspirin. As the swelling of the woman's great toes decreased, cyanosis and desquamation of the skin occurred. Her blood pressure rose to 144/110 mm. Hg, and she was discharged on June 19, 1952, with the diagnoses of gouty arthritis and hypertensive cardiovascular disease.

The patient was followed in the arthritis clinic of Bellevue Hospital for a period of six months after her discharge. During this time she had symptoms of chronic gouty arthritis, and at times her great toes were swollen and tender. Aspirin gave only moderate relief. A course of phenylbutazone (Butazolidine) was given but had to be discontinued as the drug not only made her nauseated but had no beneficial effect. She was treated with colchiceine (a derivative of colchicine) for four weeks, receiving oral doses as high as 1/25 grain (2.5 mg.) five times a day. This drug had no effect on the symptoms and caused no untoward effects. However, doses of 1/25 grain given six times a day had to be discontinued because diarrhea developed after three days.



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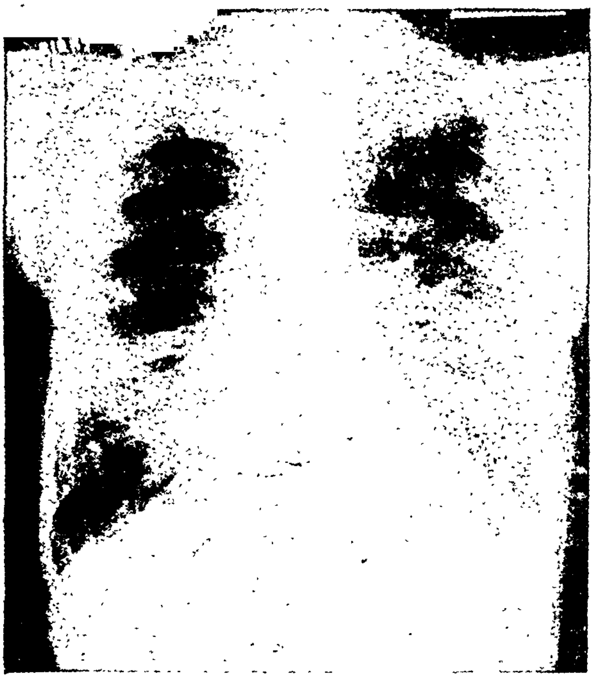
Fig. 1.—Roentgenogram showing vascular congestion, pulmonary emphysema and fibrosis, calcification of aorta, and prominent artery segment of heart in 57-year-old man.

At necropsy the body was emaciated. The pericardial space was obliterated by dense adhesions. Both pleural cavities were also partially obliterated, particularly over the lower and middle lobes. Loculations of clear fluid were present among the adhesions. The heart weighed 645 gm. The left and right ventricles measured 5 and 15 mm. respectively. There was some fibrous thickening of the mitral and tricuspid valves. The coronary vessels were moderately sclerotic but remained patent. The ascending aorta was also sclerotic. The right and left lung weighed 1,450 and 1,150 gm. respectively. There was partial to complete absence of crepitation. The bronchi and bronchial subdivisions [illegible] filled with a blood-tinged frothy exudate. The cut [illegible], granular, and slightly friable, with [illegible] consolidation. The liver extended 5 cm. below the xyphoid process and weighed 2,450 gm. The cut surface was moderately congested. The lobular architecture was fairly distinct. The gallbladder and extrahepatic biliary system were normal. The spleen weighed 200 gm. and appeared congested. The gastrointestinal tract and pancreas were not remarkable. The right and left in whole blood 7 mg. per 100 cc. The uric acid value dropped to 5.1 mg. per 100 cc. The electrocardiogram showed some effect of digitalis.

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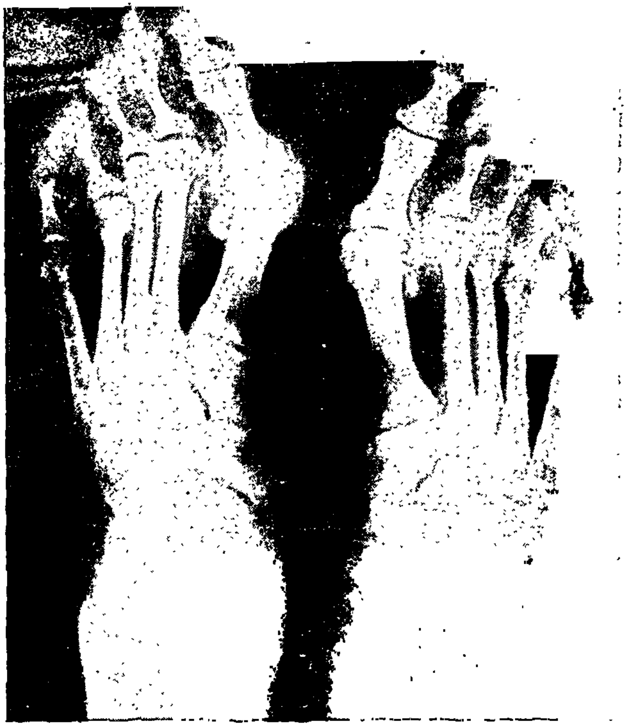

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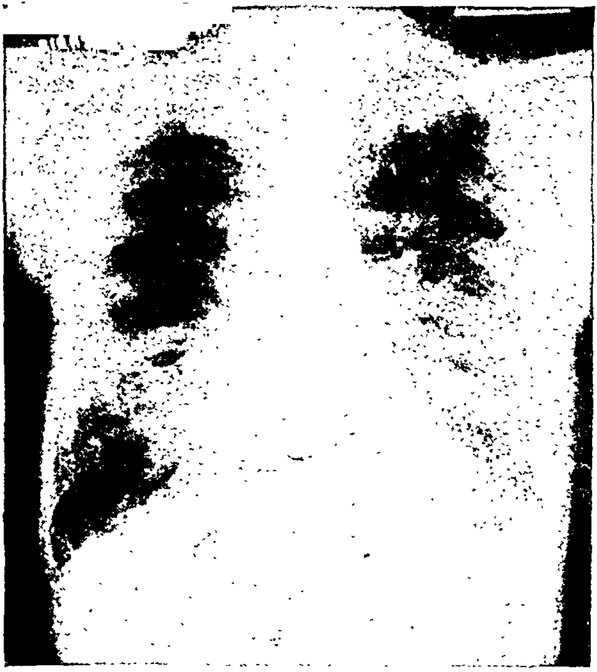

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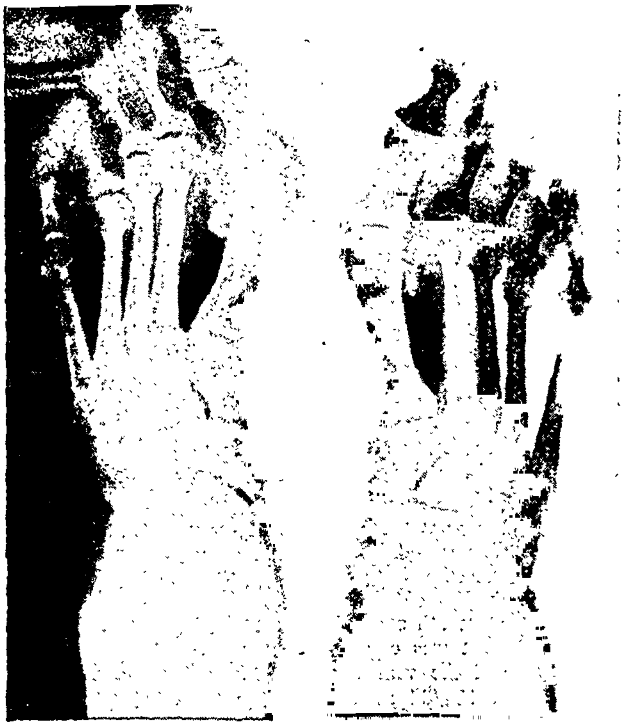

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It was felt at this time that the patient might have Ayerza's syndrome (syphilis of the pulmonary artery), with secondary polycythemia and cor pulmonale. For that reason, a lung biopsy was performed on Sept. 5, 1952. The microscopic section revealed chronic interstitial fibrosing pneumonitis (fig. 2). Repeated venesections were performed until the patient's hematocrit was 45%; it was maintained at that value. On Oct. 9, 1952, thrombophlebitis of the left calf developed. Anticoagulant therapy, penicillin, and bed rest were instituted until the symptoms and temperature had been normal for one week.

The patient was discharged on Oct. 28, 1952, feeling subjectively better, but was still dyspneic and cyanotic. He was seen by the hematology department and was given 5 mcg. of radioactive phosphorus for polycythemia. He apparently remained well for two weeks; then dyspnea, cough, ankle edema, and cyanosis recurred and became progressively worse. He was readmitted on Nov. 13, 1952, in marked cardiac decompensation. In spite of vigorous therapy, the patient's condition became worse, and he died on Nov. 15, 1952.

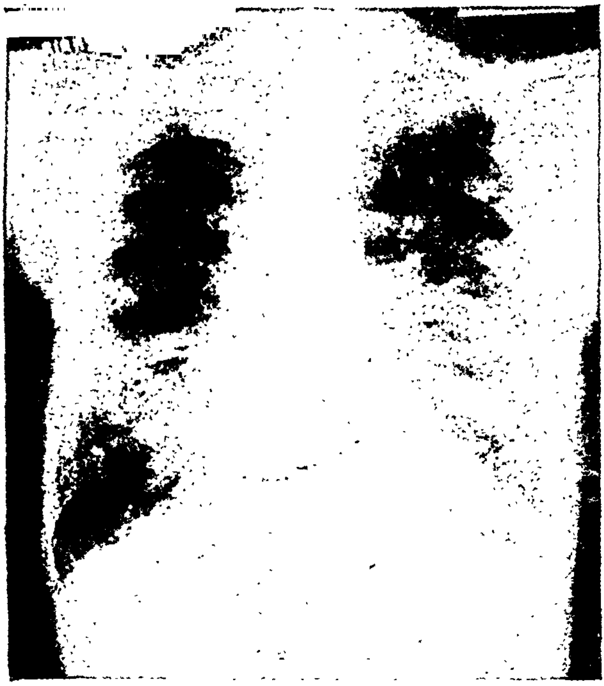


Fig. 1.—Roentgenogram showing vascular congestion, pulmonary emphysema and fibrosis, calcification of aorta, and prominent artery segment of heart in 57-year-old man.

At necropsy the body was emaciated. The pericardial space was obliterated by dense adhesions. Both pleural cavities were also partially obliterated, particularly over the lower and middle lobes. Loculations of clear fluid were present among the adhesions. The heart weighed 645 gm. The left and right ventricles measured 5 and 15 mm. respectively. There was some fibrous thickening of the mitral and tricuspid valves. The coronary vessels were moderately sclerotic but remained patent. The ascending aorta was also sclerotic. The right and left lung weighed 1,450 and 1,150 gm. respectively. There was partial to complete absence of crepitation. The bronchi and bronchial subdivisions were filled with a blood-tinged frothy exudate. The cut [illegible] red, granular, and slightly friable, with [illegible] consolidation. The liver extended 5 cm. below the xyphoid process and weighed 2,450 gm. The cut surface was moderately congested. The lobular architecture was fairly distinct. The gallbladder and extrahepatic biliary system were normal. The spleen weighed 200 gm. and appeared congested. The gastrointestinal tract and pancreas were not remarkable. The right and left kidney weighed 240 and 220 gm. respectively. The cut surface was congested and showed some loss of cortical tissue. The rest of the genitourinary tract was normal.

The histological changes of the lungs were most distinctive. There was a diffuse deposition of large quantities of partly hyalinized connective tissue. Many of the alveoli were obliterated. There were very few inflammatory cells, except in the lower lobes where terminal pneumonia had developed. Otherwise, there were a few lymphocytes, plasma cells, and macrophages. The peribronchial and perivascular spaces also showed varying degrees of fibrosis. The bronchial epithelium showed some squamous cell metaplasia. Some of the lung sections from the right upper lobe, as well as the peribronchial lymph nodes, showed anthracosilicosis. There was evidence of passive hyperemia of the other parenchymatous organs, particularly the liver. The cause of death was a combination of congestive failure and terminal pneumonia resulting from the diffuse interstitial fibrosis of the lungs.

COMMENT

The cause of diffuse interstitial fibrosing pneumonitis is obscure. There is no indication from the clinical course or from the laboratory or pathological studies of a bacterial infection or chemical irritation that might be responsible. The histological findings of diffuse interstitial fibrosis with extensive proliferation of connective tissue within the alveolar walls appears to represent a distinct clinicopathological syndrome that, if inflammatory, may represent a type of tissue response to some unknown virus.

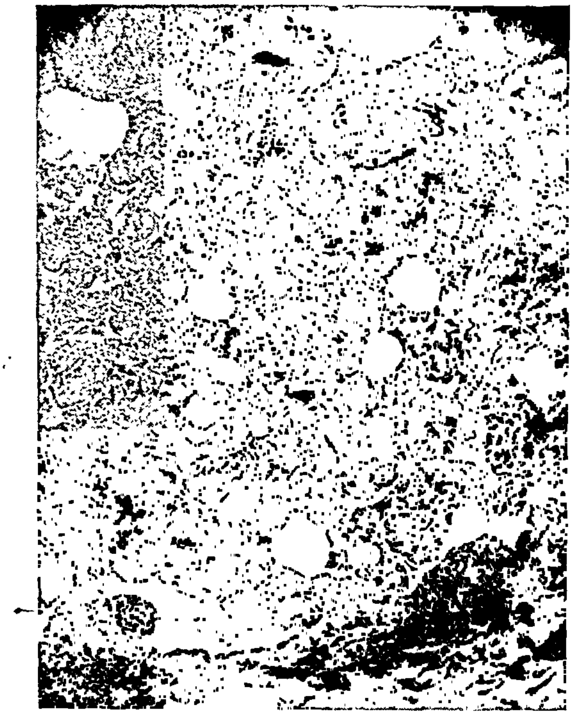


Fig. 2.—Microscopic section taken from lung biopsy of patient with diffuse fibrosing interstitial pneumonitis.

SUMMARY

A case of diffuse fibrosing interstitial pneumonitis is described. In this instance, the diagnosis was made during the patient's life by means of a lung biopsy. Postmortem examination confirmed the findings of the lung biopsy.

1930 Chestnut St. (3) (Dr. Kirshner).

COUNCIL ON PHARMACY AND CHEMISTRY

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. Stormont, M.D., *Secretary.*

Neomycin Sulfate.—Mycifradin Sulfate (Upjohn).—Neomycin is an antibiotic isolated from the elaboration products of Streptomyces fradiae, when the micro-organism is grown on suitable culture mediums.

Actions and Uses.—Neomycin sulfate is a polybasic compound, thermostable and soluble in water, but insoluble in organic solvents. It differs from other antibacterial agents in that it is extremely stable and very active in alkaline solution. Neomycin is not inactivated by exudates, enzymes, gastrointestinal secretions, and by-products of digestion or bacterial growth. The sulfate salt is stable in the dry state for at least two years when stored at room temperature. Prepared solutions retain their potency for at least one year at room temperature, although there may be a progressive deepening of color of solutions stored at room temperature or 37 C. Refrigeration of neomycin solutions is, therefore, recommended.

Neomycin sulfate exhibits activity against a variety of gram-positive and gram-negative bacteria. In the former group, it appears to be more effective against micrococci (staphylococci) than streptococci. It has a wider antibacterial spectrum than bacitracin, penicillin, or streptomycin, and it is sometimes effective against Pseudomonas and Proteus infections. Micro-organisms resistant to neomycin have been demonstrated in vitro, but emergence of resistant strains has not yet been observed clinically. It may be effective against micro-organisms that have developed resistance to streptomycin; however, the evidence thus far available does not justify the conclusion that neomycin suppresses the overgrowth of resistant bacterial variants. It is not active against fungi.

Neomycin sulfate is useful for topical applications as a solution or ointment in the local treatment or prevention of susceptible infections of the skin and the eye, including pyogenic or secondarily infected stasis dermatoses, impetigo, wounds, burns, ulcers (varicose or trophic), conjunctivitis, blepharitis, and sty (hordeolum). A solution is considered superior to an ointment in treating trophic ulcers and secondarily infected burns. In severe or extensive infections, local therapy should be supplemented with sulfonamides by mouth or penicillin by injection.

Neomycin sulfate is also useful as an intestinal antiseptic by oral administration for suppression of the usual bacterial inhabitants of the colon in surgery of the large bowel and anus. Because of its poor absorption from the gastrointestinal tract, it rarely produces systemic action or toxic effects when administered orally. The small fraction absorbed (about 3% of the amount ingested) is rapidly excreted in the urine; the remainder is excreted unchanged in the feces. Divided total daily oral dosage not exceeding 6 to 10 gm. for one to three days produces blood levels lower than the toxic serum concentration of 0.2 mg. per cubic centimeter that occurs with parenteral injection. Blood levels of this concentration may produce serious kidney damage. *Therefore, neomycin should not be injected parenterally, and when given orally, high dosage and prolonged administration should be avoided to prevent possible systemic effects.* Outgrowth of nonpathogenic yeasts usually follows reduction of the bacteria flora of the colon; Aerobacter aerogenes may grow out about 12 hours after the outgrowth of yeasts. The effectiveness of neomycin is variable in suppressing organisms of the Clostridia group.

Neomycin sulfate is usually well tolerated and is relatively nonirritating. It is reported to have a low index of sensitization. A mild laxative effect occurs with oral administration. Prolonged oral therapy may result in overgrowth of nonsusceptible organisms—particularly Candida. If new infections caused by bacteria or fungi appear during therapy, it may be advisable to discontinue the drug and/or institute appropriate measures to combat them. Oral use as an intestinal disinfectant is contraindicated in the presence of obstruction.

Dosage.—Neomycin sulfate is applied topically or administered orally for its local action in the large intestine.

For external use, it is applied as a solution containing 5 mg. per cubic centimeter or as an ointment containing 5 mg. per gram. The solution is used for wet dressings, packs, irrigations, or instillations. Topical applications of the solution or ointment are made once or twice daily using an amount sufficient to cover the affected region.

For preoperative disinfection of the colon, the patient is placed on a low residue diet and, immediately after the administration of a cathartic (unless otherwise contraindicated), is given an oral dose of 1 gm. every hour for four doses followed thereafter by 1 gm. every four hours for 24 to 72 hours prior to surgery. Administration of the antibiotic should not extend beyond 72 hours. This amount usually produces four to eight bowel movements.

Eli Lilly & Company, Indianapolis.

Ointment Neomycin Sulfate: 14.2, 28.35, and 113.4 gm. tubes. An ointment containing 5 mg. of neomycin sulfate in each gram.

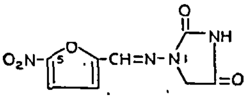
Ophthalmic Ointment Neomycin Sulfate: 3.54 gm. tubes. An ointment containing 5 mg. of neomycin sulfate in each gram.

The Upjohn Company, Kalamazoo, Mich.

Powder Mycifradin Sulfate: Vials containing 0.5 gm. of neomycin sulfate.

Tablets Mycifradin Sulfate: 0.5 gm.

Nitrofurantoin.—Furadantin (Eaton).—$C_8H_6N_4O_5$.—M.W. 238.16.—N-(5-Nitro-2-furfurylidene)-1-aminohydantoin.—The structural formula of nitrofurantoin may be represented as follows:



Actions and Uses.—Nitrofurantoin, a nitrofuran derivative, exhibits a wide spectrum of antibacterial activity against both gram-positive and gram-negative micro-organisms. It is bacteriostatic and may be bactericidal to the majority of strains of Escherichia coli, Micrococcus (Staphylococcus) pyogenes, albus, and aureus, Streptococcus pyogenes, Aerobacter aerogenes, and Paracolobactrum species. The drug is less effective against Proteus vulgaris, Pseudomonas aeruginosa, Alcaligenes faecalis, and Corynebacterium species; many strains of these organisms may be resistant to it; however, bacterial resistance to other anti-infective agents is not usually accompanied by increase in resistance of the organisms to nitrofurantoin. The drug does not inhibit fungi or viruses.

Nitrofurantoin is useful by oral administration for the treatment of bacterial infections of the urinary tract, and its use is indicated in pyelonephritis, pyelitis, and cystitis caused by bacteria sensitive to the drug. It is not intended to replace surgery when mechanical obstruction or stasis is present. After oral administration, approximately 40% is excreted unchanged in the urine. The remainder is apparently catabolized by various body tissues into inactive, brownish compounds that may tint the urine. Only negligible amounts of the drug are recovered from the feces. Urinary excretion is sufficiently rapid to require administration of the drug at four to six hour intervals to maintain antibacterial concentration. The low oral dosage necessary to maintain an effective urinary concentration is not associated with detectable blood levels. The high solubility of nitrofurantoin, even in acid urine, and the low dosage required diminish the likelihood of crystalluria.

Nitrofurantoin has a low toxicity. With oral administration it occasionally produces nausea and emesis; however, these reactions may be obviated by slight reduction in dosage. An occasional case of sensitization has been noted, consisting of a diffuse erythematous maculopapular eruption of the skin. This has been readily controlled by discontinuing administration of the drug. Animal studies, using large doses administered over a prolonged period, have revealed a decrease in the maturation of spermatozoa, but this effect is reversible after discontinuance of the drug. Until more is known concerning its long-term effects, blood cell studies should be made during therapy. Frequent or prolonged treatment is not advised until the drug has received more widespread study. It is otherwise contraindicated in the presence of anuria, oliguria, or severe renal damage.

Dosage.—Nitrofurantoin is administered orally in an average total daily dosage of 5 to 8 mg. per kilogram (2.2 to 3.6 mg. per pound) of body weight. One-fourth of this amount is administered four times daily—with each meal and with food at bedtime—to prevent or minimize nausea. For refractory infections, such as Proteus and Pseudomonas species, the total daily dosage may be increased to a maximum of 10 mg. per kilogram (4.5 mg. per pound) of body weight. If nausea is severe, the dosage may be reduced. Medication should be continued for at least three days after sterility of the urine is achieved.

Tests and Standards.—

Physical Properties: Nitrofurantoin is a yellow, bitter powder with a slight odor, which decomposes at 258-262°. It is very slightly soluble in alcohol, and practically insoluble in ether and water.

Identity Tests: Suspend in a test tube about 5 mg. of nitrofurantoin in 5 ml. of water and add 5 ml. of sodium hydroxide T.S.: the nitrofurantoin dissolves and an orange-red color develops.

Transfer to a 50 ml. Erlenmeyer flask about 50 mg. of nitrofurantoin and add 1 gm. of granular zinc, 10 ml. of alcohol, and 20 ml. of diluted sulfuric acid. Heat the mixture in a steam bath for 45 min.: the nitrofurantoin dissolves slowly to form an almost colorless solution *(presence of nitro group).*

A 0.0005% solution, prepared as described in the spectrophotometric assay for nitrofurantoin, exhibits ultraviolet absorption maxima at about 266 and 368 mμ [specific absorbancy, E(1%,1 cm.), about 753] and a minimum at about 305 mμ. The ratio of the absorbancies at 368 and 266 mμ is 1.26 to 1.46.

Purity Tests: Dry about 1 gm. of nitrofurantoin, accurately weighed, at 105° for 5 hours: the loss in weight does not exceed 1.0%.

Char about 1 gm. of nitrofurantoin, accurately weighed, cool the residue, add 1 ml. of sulfuric acid, heat cautiously until evolution of sulfur trioxide ceases, ignite, cool, and weigh: the residue does not exceed 0.05%.

Assay: (Nitrofurantoin) Prepare a 0.0005% solution of nitrofurantoin as follows. Transfer to a 100 ml. volumetric flask 0.1 gm. of nitrofurantoin, accurately weighed, fill to the mark with dimethylformamide, and mix. Transfer to a second 100 ml. flask 5 ml. of this solution, fill to the mark with water, and mix. Transfer to a third 100 ml. volumetric flask 10 ml. of this last solution, fill to the mark with water, and mix. Spectrophotometrically determine the absorbancy in a 1 cm. quartz cell at 368 mμ, using water as a blank. The concentration of nitrofurantoin in the solution in mg./ml. = absorbancy ÷ 75.3. The amount of nitrofurantoin is not less than 95.0 or more than 105.0%.

Dosage Forms of Nitrofurantoin

TABLETS. *Identity Tests:* Transfer to a test tube about 5 ml. of the clear centrifugate of the first dilution from the spectrophotometric assay for nitrofurantoin in tablets and add 5 ml. of sodium hydroxide T.S.: an orange-red color develops.

The tablets respond to the spectrophotometric identity test for the active ingredient in the monograph for nitrofurantoin.

Assay: (Nitrofurantoin) Weigh 20 tablets and powder them. Transfer to a 100 ml. volumetric flask an amount of powder, accurately weighed, equivalent to about 0.1 gm. of nitrofurantoin, add 50 ml. of dimethylformamide, and shake the flask mechanically for 15 min. Fill to the mark with dimethylformamide and mix. Centrifuge a portion of the solution at 2,000 rpm for 5 minutes. Transfer to a second 100 ml. volumetric flask 5 ml. of the clear centrifugate, fill to the mark with water, and mix. Transfer to a third 100 ml. volumetric flask 10 ml. of this last solution, fill to the mark with water, and mix. Spectrophotometrically determine the absorbancy in a 1 cm. quartz cell at 368 mμ, using water as a blank. The concentration of nitrofurantoin in the solution in mg./ml. = absorbancy ÷ 75.3. The amount of nitrofurantoin is not less than 95.0 or more than 105.0% of the labeled amount.

Eaton Laboratories, Inc., Norwich, N. Y.

Tablets Furadantin: 50 and 100 mg. U. S. patent 2,610,181. U. S. trademark 569,968.

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SMOKER'S RESPIRATORY SYNDROME

Most of the literature on the effect of tobacco on man deals with cardiovascular changes.[1] More recently studies have attempted to show a correlation between smoking and pulmonary carcinoma. Myerson [2] has drawn attention to the effect of excessive smoking on the larynx. Edema is first noted in a localized area of one of the vocal cords. As the condition progresses this becomes bilateral and edematous fibromas are formed. If the condition is of long standing it becomes irreversible and must be treated by surgical removal. Somewhat akin to this but still a separate clinical entity is smoker's respiratory syndrome as described by Waldbott.[3]

This condition is characterized by a triad of symptoms consisting of chronic pharyngitis, wheezing and dyspnea, and a tendency to respiratory infection with or without fever. The pharynx is fiery red and may be covered with a mucopurulent discharge. Small lymphoid nodules form on the wall of the pharynx. Other symptoms include cough, a sense of constriction in the chest, chest pain, and hoarseness. The wheezing may be explained by the fact that the mucus formed by the chronic inflammation partially obstructs the air passages. The presence of mucus and the bronchoconstrictor action of nicotine account for the sense of constriction in the chest, the bronchospasm, and the dyspnea.

This condition is very common and is often mistaken for bronchial asthma or bronchiectasis. Unlike asthma this syndrome has no allergic basis; the wheezing is confined to the trachea and the upper portion of the chest; emphysema, if present, is slight; there is no eosinophilia; and the vital capacity is only slightly decreased. Some patients may have both asthma and the respiratory syndrome.

Early cases are reversible and require only the elimination of smoking to effect a cure within about seven days. The symptoms return if smoking is resumed. More advanced cases require extensive antibiotic treatment in addition to the avoidance of tobacco smoke, and a few are so far advanced as to be irreversible. The recognition of this condition is important in order to prevent subjecting the patient to troublesome and unnecessary allergic testing or visualization of the bronchial tree and to remove the cause before advanced changes take place.

FOURTEENTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

There is increasing interest in stress as a factor in the development of disease. Industrial physicians and others engaged in the physical examination of executives have been especially concerned. The so-called quasi-occupational diseases, such as hypertension, peptic ulcer, colitis, obesity, alcoholism, and others, have been under observation for long periods of time without clear-cut understanding and weighing of the effects of nonoccupational as opposed to occupational tensions and situations. There is good evidence that these stress disorders are not more prevalent in executive or supervisory groups than they are in the working population generally.

This matter will receive serious attention from clinical, geriatric, and pyschosomatic points of view during the 14th annual Congress on Industrial Health at the Brown Hotel in Louisville, Ky., February 24 and 25. Closely associated will be discussions on keeping well persons well, to include estimations of the present health status of industrial workers, plans for making physical examinations more effective in industry and in the community, and a practical demonstration of the preventive medical program now in operation in a large American corporation.

Emphysema is a clinical condition frequently encountered by internists, chest physicians, radiologists, and industrial practitioners. This subject will be thoroughly explored in its clinical aspects and with regard to pathological physiology, histopathology, radiography, and therapy. Certain developments in the occupational health field make it imperative that the etiological factors bearing on emphysema be well understood.

A special feature of the sessions on February 24 will be the presentation of the Physician's Award for 1953 for an outstanding contribution to the employment welfare of the handicapped. This award, signed by President Eisenhower, is made by the President's Committee on Employment of the Physically Handicapped.

Most of the first day sessions will be devoted to keeping employees at work, a subject of first-rank importance in periods of rising absenteeism. A panel will present an optimal industrial health and safety program with emphasis on small plant participation. Since first aid and emergency follow-up are always prime elements in an effective prevention program, instructions and demonstrations in this field will be provided by the national and local Red Cross organizations.

The final half day will be conducted jointly with the Council on National Emergency Medical Service, with able assistance from the Federal Civil Defense Administration. The principal components in major disaster will be dramatically described. The program will conclude with a practical demonstration of preparation for trouble in Vicksburg, Miss., and how industry and medicine proved to be an indispensable team when a major catastrophe struck that city.

---

[1] Waldbott, G. L.: Smoker's Respiratory Syndrome, A Clinical Entity, J. A. M. A. 151: 1398-1400 (April 18) 1953.

[2] Myerson, M. C.: Smoker's Larynx: A Clinical Pathological Entity, Ann. Otol. Rhin. & Laryng. 59: 541-546 (June) 1950.

[3] Waldbott, G. L.: Further Observations on Smoker's Respiratory Syndrome, Ann. Int. Med. 39: 1026-1031 (Nov.) 1953.

The program of the Congress appears in this issue of The Journal. The Brown Hotel is holding space for those requesting reservations for the meeting. Reservations should be made promptly.

IRON ABSORPTION IN HEMOCHROMATOSIS

Hemochromatosis is a metabolic disturbance characterized clinically by diabetes mellitus, cirrhosis of the liver, and skin pigmentation. In addition, there is extensive deposition of iron throughout the body. Apparently in this condition there is increased absorption of iron from the gastrointestinal tract; since the body has no mechanism for disposing of other than insignificant amounts of iron, increased intake leads to accumulation in the tissues. Evidence in support of this viewpoint has come from balance studies with radioactive iron, which is particularly useful in studies of this type in view of the difficulty of recovering iron quantitatively from feces and tissues in the standard colorimetric procedures and because of the many possibilities of introducing extraneous iron as a contaminant.

A recent study is that of Peterson and Ettinger.[1] These investigators administered 5 to 15 μ of Fe^{59} as ferric chloride orally to two patients with hemochromatosis and to four normal subjects. Ferric iron was chosen because it is absorbed less readily than ferrous iron and because dietary iron probably exists in the ferric form. It was administered to fasting subjects to avoid factors in the diet known to interfere with the absorption of iron. The radioactivity of the iron in the blood serum was measured one, two, and three hours after administration and that of the red blood cells at intervals of 10, 15, and 20 days. Stools were collected for one to two weeks for analysis of unabsorbed iron. The gastrointestinal absorption could be calculated from the amount not recovered in the feces since only minute amounts of iron are excreted into the gastrointestinal tract. The absorption of iron in the normal subjects ranged from 1.5% to 4.4% while the uptake by the red blood cells at the end of 15 days ranged from 1% to 4% of the ingested dose. In the two patients with hemochromatosis, the absorption was approximately 20% and 45% respectively and the uptake in the red blood cells some 16% of the ingested dose. Increased iron absorption in the patients with hemochromatosis was also indicated by the fact that radioactive iron was present in appreciable amounts in their serum but was indetectable in the serum of all the controls.

It can be seen that in one patient the amount of iron absorbed was three times as great as that found in the red blood cells. The authors felt that this discrepancy arose from the fact that when excessive amounts of iron are stored in the liver only a small portion of that recently absorbed will go to the production of red blood cells. Support for this viewpoint is offered by the fact that the patient in whom the amount of iron absorbed corresponded to the amount taken up by the red blood cells had undergone repeated phlebotomies, which had served to reduce his iron stores. Thus, the uptake of radioiron by red blood cells cannot be used as a reliable index of iron absorption in the presence of excessive iron storage; in such cases balance studies provide the most accurate information.

The report by Peterson and Ettinger is in accord with previous studies by two other groups of investigators. Dubach, Callender, and Moore[2] reported that a patient with hemochromatosis absorbed about 20% of an oral dose of radioiron as ferrous chloride, while only 2% appeared in his blood. While the amount absorbed was considerably greater than that in most of the normal control subjects, the amount in the blood was considerably less, thus emphasizing the erroneous results that may be obtained if the amount of radioiron in the circulatory hemoglobin is taken as a measure of iron absorption. Alper, Savage, and Bothwell,[3] giving radioiron as ferrous sulfate, found that a patient with hemochromatosis absorbed about 60% and a normal control subject about 15% of the administered dose. In the patient, the radioiron uptake in the blood reached an initial peak about three hours after administration, amounting to about 1.5% of the dose. It then fell off sharply and rose again slowly to a peak of about 4% about three months later. Apparently the radioiron was removed from the plasma, stored, and gradually built into hemoglobin.

While increased iron absorption in hemochromatosis appears to be well established, it remains to be determined what the factors are that modify the absorption and whether the increased iron stores in the tissues play a primary role in this disease. Evidence that excessive iron storage does have a deleterious effect is indeed suggested by the clinical improvement that has been reported to follow depletion of iron stores by repeated massive phlebotomies.[4]

REFERRED CARDIAC PAIN

In 1910 Hirschfelder[1] described an arrangement of the dermatomes involved in referred pain, derived from the work of Head[2] and Mackenzie.[3] It was suggested that pain from the right ventricle is referred to the right hypochondrium and that pain from the left auricle is referred to the left hypochondrium. Great progress has been made since the turn of the century. Clinical experience now affirms that in most instances angina is referred to the left substernum and arm, regardless of whether its origin is in the left or right ventricle or in the ventricular septum. The complex winding and unwinding of the cardiac tube in the course of its ontogeny has introduced complexities that are still not completely understood.

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1. Peterson, R. E., and Ettinger, R. H.: Radioactive Iron Absorption in Siderosis (Hemochromatosis) of the Liver, Am. J. Med. **15**: 518, 1953.
2. Dubach, R.; Callender, S. T., and Moore, C. V.: Studies in Iron Transportation and Metabolism: VI. Absorption of Radioactive Iron in Patients with Fever and with Anemias of Varied Etiology, Blood **3**: 526, 1948.
3. Alper, T.; Savage, D. V., and Bothwell, T. H.: Radioiron Studies in a Case of Hemochromatosis, J. Lab. & Clin. Med. **37**: 665, 1951.
4. Peterson and Ettinger.[1] Davis, W. D., Jr., and Arrowsmith, W. R.: The Treatment of Hemochromatosis by Massive Venesection, Ann. Int. Med. **39**: 723, 1953.

[1] Hirschfelder, A. D.: Diseases of the Heart and Aorta, Philadelphia, J. B. Lippincott Company, 1910.

[2] Head, H.: On Disturbances of Sensation, with Special Reference to the Pain of Visceral Disease, Brain **16**: 1-133, 1893.

[3] Mackenzie, J.: Some Points Bearing on the Association of Sensory Disorders and Visceral Disease, Brain **16**: 321-354, 1893.

The common territory of pain reference forms a band broader at the midsternum, where it extends from the third or fourth to the sixth or seventh intercostal spaces; it continues anteriorly across the upper axilla almost bisecting the ventral aspect of the arm and remains limited to the inner area, narrowing as it approaches the wrist to taper off on the ventral surface of the fifth finger.[4] Occasionally the distribution is right-sided, but this is not related to an origin in the right ventricle. Uncommon zones of radiation include the head, scalp, face, neck, clavicular regions, and shoulder. The aorta is sometimes represented, as in dissecting aneurysm, by a radiation to the scapula, but commonly the pain is severe, difficult to localize, and easily confused with anginal pain. Pain from the pulmonary artery is not clinically understood.

The auricles are certainly hindmost in the development of the cardiac tube and theoretically should receive their innervation from more caudal portions of the thoracic segments. Actually the complex structure of the superficial and right and left branches of the deep cardiac plexuses and their numerous connections and intricate pathways have not yet provided the simple, logical, and satisfying pattern that was envisioned by our scientific forebears. On the basis of the recent work of Prof. A. Barry of Ann Arbor, a more adequate knowledge of the derivation of the great arteries has become available.[5] The pulmono-aortic trunk derives from the former ventral aorta and is represented by cervical segments. The main pulmonary arterial branches derive from the sixth aortic arch, while a small segment of the transverse aorta comes from the sixth arch. The segment of the aorta giving rise to the subclavian artery comes from the primitive third to seventh segments, and the descending aorta is derived from successive segments beginning with the eighth. The aortic and pulmonary innervation is thus rather complex and differs significantly from the interpretations of earlier workers.

HEPATOMEGALY AND DIABETES

The liver frequently is increased in size in diabetics. This has been recognized for many years. In fact, special attention was called to this phenomenon in children with severe uncontrolled diabetes mellitus as long ago as 1938.[1] More recently, Goodman [2] found that 21 of 45 diabetics with hepatomegaly had an insulin defficiency as evidenced by poorly regulated diabetes or acidosis; 13 were obese and only mildly diabetic, and 11 had a lipotropic deficiency as determined by their dietary history. Histological examinations have shown that the increase in the size of the liver is due to fatty deposits, not to glycogen, and control of the diabetes causes disappearance of the hepatomegaly, thus suggesting that the underlying cause of the hepatomegaly is poor diabetic control and not a lack of choline or other derivatives of raw pancreatic tissue.

Goodman now finds that, because the liver may be palpable without being enlarged and vice versa, palpation is an unreliable criterion of true hepatomegaly. Furthermore the palpation of an enlarged liver in an obese patient is difficult. He therefore advocates estimating liver enlargement by percussing the extent of the liver dulness in the midclavicular line and places the upper limit of normal at 7.5 cm. in men and at 7 cm. in women.[3]

In order to determine whether there was a correlation between the hepatomegaly in diabetics and the state of control of the diabetes he observed a series of patients that included (1) those with controlled diabetes, (2) those who passed 50 or more grams of glucose in their urine in 24 hours, and (3) those with ketoacidosis. Hepatomegaly was present in 9% of the first group, 60% of the second, and all of the third. The livers in the third group were greatly enlarged and tender. The hepatomegaly disappeared after about 10 days with a regimen that controlled the diabetes, or if the patients were obese the liver regained its normal size with a return to normal body weight.

The author concluded that such symptoms as polyuria and polydipsia and the presence of hepatomegaly or neuropathy are better indications of the state of diabetic control than the amount of glucose in a 24-hour specimen of urine. He believes that the best possible liver function should be maintained in diabetics and that diabetic control furthers this end.

ELECTRICAL CHARGES ON PERSONS AND AUTOMOBILES

During periods when the humidity is very low, such as on cold, dry days, there is a tendency for persons and objects to develop a static electrical charge on the surfaces. This tendency is enhanced by friction, as when one slides over a car seat or walks across a rug. A moving automobile readily develops an electrical charge due to the friction of the air flowing over its surface. More or less discomfort arises when a person touches another person or some object and the static charge discharges.

Relief from this situation can be brought by humidification of the air in the room, but this does not, of course, solve the problem when this phenomenon occurs out of doors. One way of minimizing the development of a static charge on the surface of an automobile is to attach a piece of "conductive rubber" to the car so that the conductive rubber drags on the ground. This will allow for discharge of the electrostatic charge. Persons who find the phenomenon quite disturbing can avoid this difficulty by touching the object from which it is suspected a shock will result with something metallic such as a coin or a key gripped tightly in the hand. Under these conditions electrical discharge passes between the metal coin or key and the object the person is about to touch, so that the person does not experience the discomfort caused by the electrical discharge.

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[5] Barry, A.: The Aortic Arch Derivatives in the Human Adult, Anat. Rec. 111: 221-238, 1951.

[1] Marble, A.; White, P.; Bogan, I. K., and Smith, R. M.: Enlargement of the Liver in Diabetic Children: I. Its Incidence, Etiology and Nature, Arch. Int. Med. 62: 740-750 (Nov.) 1938. White, P.; Marble, A.; Bogan, I. K., and Smith, R. M.: Enlargement of the Liver in Diabetic Children: II. Effect of Raw Pancreas, Betaine Hydrochloride and Protamine Insulin, ibid. 62: 751-764 (Nov.) 1938.

[2] Goodman, J. I.: Enlarged Liver in Diabetes Mellitus: Its Determination by Percussion, Am. J. Digest. Dis. 18: 181-185 (June) 1951.

[3] Goodman, J. I.: Hepatomegaly and Diabetes Mellitus, Ann. Int. Med. 39: 1077-1087 (Nov.) 1953.

ORGANIZATION SECTION

FOURTEENTH ANNUAL CONGRESS ON INDUSTRIAL HEALTH

Brown Hotel, Louisville, Ky.
Feb. 24-25, 1954

Sponsored by
The Council on Industrial Health of the American Medical Association

Sessions are open to physicians and others interested in industrial health

PROGRAM

Wednesday Morning, Feb. 24, 9:30

OPENING GENERAL SESSION

J. Duffy Hancock, M.D., Louisville, *Presiding*

Industry and Medicine—Partners in Health
Robert A. Kehoe, M.D., Cincinnati

Panel Discussion—Stress and Success—A Medico-Social Problem of Modern American Life
Moderator:
William P. Shepard, M.D., New York
Participants:
Edward L. Bortz, M.D., Philadelphia
Leo H. Bartemeier, M.D., Detroit

Wednesday Afternoon, Feb. 24, 2:00

SECTION I. KEEPING WELL PEOPLE WELL
Lemuel C. McGee, M.D., *Presiding*
Wilmington, Del.

Are Workers Getting Healthier?
Frank Dickinson, Ph.D., Chicago

Making Physical Examinations More Effective in Industry and the Community
Speaker to be announced

The Preventive Medical Program of the du Pont Company
Allan J. Fleming, M.D., Wilmington, Del.
George W. Hogshead, M.D., Nitro, W. Va.
Alfred W. Pennington, M.D., Wilmington, Del.
Frederick W. Dershimer, M.D., Wilmington, Del.

SECTION II. EMPHYSEMA—OCCUPATIONAL ASPECTS OF A COMMON CLINICAL FINDING
O. A. Sander, M.D., Milwaukee, *Presiding*

Clinical Aspects
George W. Wright, M.D., Cleveland

Pathological Physiology
Ward S. Fowler, M.D., Rochester, Minn.

Histopathology
Marvin Kuschner, M.D., New York

Radiography
Leonard J. Bristol, M.D., Saranac, N. Y.

Therapy
Frank Princi, M.D., Cincinnati

Wednesday Evening, Feb. 24, 6:30

Annual Dinner

With the Jefferson County Medical Society
David M. Cox, M.D., Louisville, *Presiding*

National Award for 1953—To Physician Making an Outstanding Contribution to the Employment Welfare of the Handicapped

Rehabilitation in Louisville
J. Murray Kinsman, M.D., Louisville

Who's Disabled?—A Dramatic Presentation of What Is Left—Not What Is Lost
Donald A. Covalt, M.D., New York, Demonstrator

Thursday Morning, Feb. 25, 9:00

Panel Discussion—Keeping People at Work—A Small Plant Operator Consults the Experts
Moderator:
H. F. Reinhard, New York
Participants:
Warren A. Cook, Ph.D., Ann Arbor, Mich.
Gay Merrihue, R.N., New York
John Gibson, Washington, D. C.
Carl Olson, M.D., Chicago
Gene Colcord, Owensboro, Ky.

The Plant Prepares for Emergencies
Demonstrations of First Aid and Follow-Up Procedure arranged with assistance from the Louisville Chapter, American Red Cross

Thursday, Feb. 25, 12:00

Luncheon

With Louisville Rotary Club
L. Eugene Johnson, Louisville, *Presiding*

Address
Val Peterson, Washington, D. C.

Thursday Afternoon, Feb. 25, 2:00

JOINT SESSION WITH THE COUNCIL ON NATIONAL EMERGENCY MEDICAL SERVICE

James Sargent, M.D., Milwaukee, *Presiding*

IF MAJOR DISASTER STRIKES

Atomic Bombing
Charles Dunham, M.D., Washington, D. C.

Bacterial Warfare
John J. Phair, M.D., Cincinnati

Chemical Warfare
Col. James Defandorf, Washington, D. C.

Psychological Warfare
Ozro T. Woods, M.D., Dallas, Texas

HOW WE FACED UP TO DISASTER

Preparation and Organization
Lawrence Long, M.D., Jackson, Miss.

Industry and Medicine—The Indispensable Disaster Team
George Martin, M.D., Vicksburg, Miss.

Local Application
Neil Dalton, Louisville

SUMMARY OF THE CONFERENCE

ANOTHER RECORD YEAR FOR AMERICAN MEDICAL EDUCATION FOUNDATION

With the close of business on Dec. 31, 1953, the American Medical Education Foundation chalked up some additional "firsts" in its effort to raise funds for our country's medical schools. The foundation, working through its 53 state and metropolitan committees, recorded a gross return of $1,090,771.13 from 17,809 individual physicians, organizations, and laymen. This is the first time since the inception of the foundation that its annual income has passed the million dollar mark. Foundation officials believe that this will have a marked effect on the foundation's future returns, since it evidences growing acceptance among the medical profession. Also worthy of note and indicative of future success is the continuing growth of contributors, which increased 149% over 1952 (17,809 compared to 7,259 in 1952). There has been a marked increase in dollar contributions received from individuals as compared to previous years. *Approximately $475,000 of the total received in 1953 came from this source, and it amounted to a 63% increase over the same income segment for 1952.*

Illinois took an early lead in the state standings and held the lead throughout the entire year, largely due to the introduction of the "Illinois Plan," whereby the House of Delegates to the Illinois State Medical Society voted a blanket increase of $20 per member in the state dues, which were turned over to the foundation. Utah has recently followed the example set by Illinois and introduced the same method. Leaders in Illinois who support this method of raising funds believe that it will solve the knotty problem of organizing and maintaining active committees for the purposes of annual solicitation of the society's membership. It is a plan worthy of study by states having a heavy physician population where the maintenance of active committees poses a problem. The passage of the dues increase actually stimulated the income from individual physicians in that state over the previous year. Illinois physicians gave $12,121 and the Chicago Medical Society made a treasury gift of $25,000 to bring the total income from Illinois in 1952 to $37,121. The Illinois plan produced $167,630 from 8,386 dues-paying members. In addition to the dues increase group, 86 contributions were received from Illinois, totaling $22,831.99 When compared to 1952, Illinois moved from 35th place in relative state standings (88 contributors gave $37,121 in 1952) to first place in the nation, with a total of 8,472 contributors and total contributions of $190,461.99 during 1953. We believe that the Illinois plan acted as a stimulus in Illinois and that such a plan would undoubtedly serve similarly in other states. It is a plan worthy of consideration.

The American Medical Association voted a fourth grant of $500,000 to the foundation to be paid during the calendar year of 1954. As in the case of the past three grants in the same amounts, it will serve as seed money for the 1954 campaign for funds among the profession. The American Medical Association has given a total of 2 million dollars in four successive grants to this project since December, 1950.

State chairmen of the American Medical Education Foundation will meet on Jan. 24, 1954, at the Sheraton Hotel in Chicago to discuss campaign plans for the current year. The one day conference will afford state chairmen an opportunity to discuss and exchange problems and suggestions beneficial to their respective local campaigns.

The American Medical Education Foundation has enjoyed steady progress throughout its three year history and has contributed approximately 50% of the $4,764,152.79 that has been distributed to the nation's medical schools through the grants made by the National Fund for Medical Education. Recent decisions handed down by the supreme court of the state of New Jersey have removed obstacles standing in the way of corporations that wished to make donations to education. With the medical profession's attainment of a 2 million dollar annual goal, it is believed that American business and industry will produce willingly contributions necessary to meet and relieve the financial problems of our medical schools. The American Medical Education Foundation deserves the support of every physician in the United States. It has one purpose—giving financial assistance to our institutions of medical education—the same institutions that have consistently graduated the world's best-trained physicians.

Every member of the medical profession can look with pride at the compact group of 79 approved medical schools in this country; nowhere in the world can another nation boast their equal. This system of medical education is a by-product of a nation of free people, working together to produce the world's highest health standards for their own benefit. It is a well-known fact that a medical student does not pay the full cost of his medical education. A substantial part of that cost must come from the general funds of the parent university. Therefore, it behooves all members of the medical profession to remember their obligation to the school where they received their medical training and to contribute financially each year in proportion to their means. If every member of the medical profession will resolve to make a contribution this year, the foundation will more than meet its quota during 1954.

JOINT COMMISSION ON ACCREDITATION OF HOSPITALS

The Director of the Joint Commission on Accreditation of Hospitals, Dr. Edwin L. Crosby, has forwarded the following report of the annual meeting of the Board of Commissioners of the Joint Commission, which is sponsored by the American College of Physicians, American College of Surgeons, American Hospital Association, American Medical Association, and the Canadian Medical Association.

The annual meeting of the Board of Commissioners of the Joint Commission was held on December 5 in Chicago. The officers for 1954 are Newell W. Philpott, M.D., Chairman; LeRoy H. Sloan, M.D., Vice-Chairman; Stuart K. Hummel, Treasurer, and Edwin L. Crosby, M.D., Secretary. The Board expressed its gratitude and sincere appreciation to Gunnar Gundersen, M.D., as Charter Chairman. His leadership and wise counsel in this initial period have given the Joint Commission a firm base and a good beginning toward attaining its purpose of supporting better patient care.

Consultations

The Board received a report on the "Consultation" Standard from a review committee composed of Doctors Philpott, Chairman, Alexander M. Burgess and Stanley R. Truman. The Committee recommended and the Board approved the following as Standard Required II B 3:

"Except in emergency, consultation with a member of the Consulting or of the Active medical staff shall be required in all major cases in which the patient is not a good risk, or in which the diagnosis is obscure, and in all first caesarean sections, sterilizations, curettages or other operations which may interrupt a known, suspected, or possible pregnancy. The consultant shall make and sign a record of his findings and recommendations in every such case. In all cases where a rule of the hospital requires consultation, the consultant may, and in the case of free patients shall, give his services without charge. This Standard is applicable to all members of the medical staff."

The Board asked the Committee on Consultations to continue its study and report back after July 1, 1954. The Committee would appreciate comments or suggestions from any interested individual or group as to the Standard on Consultations as stated in this Bulletin which, since the Board action of December 5, should be followed by hospitals and their medical staffs.

Interpretation of Dental Staff Standard

The Board reviewed the recommendations of a liaison committee between representatives of the Joint Commission and the American Dental Association headed by Dr. Leslie M. Fitzgerald, President. The Committee considered Standard Contingent II D. "Dental Staff."

"The dental staff shall conform in general to standards established for the medical staff (see Required II). In addition:

1. Members of the dental staff shall be graduates of approved schools of dentistry.

2. Patients admitted for dental services shall be admitted on a surgical service and shall be the responsibility of the chief of that service.

3. Adequate medical survey, by a member of the service to which admitted, shall be done on each patient before dental surgery. Indicated consultations shall be held in complicated cases."

The Board approved the following interpretation of this Standard with regard to the dental staffs in well departmentalized hospitals:

"Depending upon the local situation and the qualifications of the individuals involved, Contingent II D, Section 2, might be interpreted to mean that 'a surgical service' may be the oral surgical service to which the members of the dental staff admit and discharge dental patients, provided that this service is the responsibility of the Chief of the Department of Surgery and that Section 3 of the Standard is complied with actively.

"In these instances, the bylaws of the staff would indicate that the staff of the hospital would be a 'medical and dental staff' and that within the framework of the hospital's staff bylaws, dentists would be appointed to and hold appointments in the division of oral surgery just as physicians and surgeons are appointed to other services of the hospital."

The Board emphasized that "the medical survey" referred to in Contingent II D 3 must be done by a Doctor of Medicine on the medical staff of the hospital.

Smaller Hospitals

The Board recognized that smaller hospitals have special problems in regard to accreditation, largely in the matter of interpretation of the Standards. The Chairman agreed to appoint a special committee to review this situation and devise methods to assist the smaller hospitals.

General Practice

The Board passed a resolution commending the American Academy of General Practice for its initiative in developing the Manual on General Practice Departments in Hospitals as a guide in the organization of such departments.

On December 6, representatives of the Joint Commission met with members of the Commission on Hospitals of the American Academy of General Practice. The group discussed the underlying principles of medical staff meetings, as published in the August Bulletin of the Joint Commission.

Such staff meetings are held for the purpose of a thorough review of the medical care of patients, in or recently discharged from the hospital, and frequent meetings of clinical departmental staffs are regarded as essential in well-organized departmentalized hospitals.

After the discussions, the following was stated as proper: In a well departmentalized hospital electing to hold at least monthly clinical departmental meetings and quarterly general medical staff meetings in accord with Contingent II, A 4 b, a doctor who holds an "active staff" appointment in a Department of General Practice should attend at least nine (75% of 12) departmental meetings per year held by the clinical services in which he has privileges in addition to 75% attendance at the quarterly meetings of the entire active medical staff. One of the two following patterns for attendance at clinical departmental meetings should be followed by "an active staff member" of a Department of General Practice:

1) If he has privileges as an "active staff member" in a clinical department, he should attend 75% of the monthly meetings of that department just as all other active staff members of that clinical department. It is understood that no physician will have "active staff" appointment in more than one clinical department.

OR

2) If he has privileges other than as an "active staff member" in clinical departments, he should attend at least nine departmental meetings per year among the clinical services in which he has such privileges. The clinical departmental meetings attended shall be of his own choice, with the exception that he might be requested to attend a particular departmental clinical meeting.

1,175 Hospitals Surveyed

The Director reported that during the first eleven months of 1953, the Board had acted on 1,175 hospital surveys. The Commission began actual survey operations January 1, 1953. A listing of Fully and Provisionally Accredited Hospitals as of December 31, 1953 will be published early in 1954.

The Board was informed that the field staff had observed the following factors affecting patient care as the major deficiencies noted during their surveys:

1. Fire hazards.

2. Need for improvement in the active supervision of the clinical work done in the hospital by a well organized medical staff which is self-governing, subject to the ultimate authority of the governing body of the hospital.

3. Need for improvement in the thorough review, analysis, and evaluation of the clinical work done in the hospital on at least a monthly basis throughout the year.

4. Insufficiently recorded essential clinical entries on the medical records to establish the diagnosis and support the treatment.

5. Excessively high and unexplained rates for morbidity, Caesarean Sections, "not justified" removal of "normal tissue" and infant, maternal, anesthetic and total mortality in a hospital.

As we approach the end of our first year of operations, the great interest and voluntary participation in hospital accreditation of the hospitals and their medical staffs in the United States and Canada is a source of satisfaction and gratification to the Board of Commissioners and the staff of the Joint Commission on Accreditation of Hospitals. Many of you have questions concerning details of our program. Please write to the Commission's office at 660 North Rush Street, Chicago.

REGIONAL LEGISLATIVE CONFERENCES

The A. M. A. Committee on Legislation is completing plans for six regional legislative conferences to be held in various sections of the country. These meetings will have a two-fold purpose: (1) to explain and perfect the system now being followed for alerting key legislative personnel in the states to situations requiring immediate contact with members of Congress on national legislative affairs and (2) to discuss in detail background information regarding important medical issues pending or coming up in the new Congress.

The schedule of the legislative meetings is as follows: Saturday, Jan. 23, in San Francisco; Sunday, Jan. 24, Denver; Saturday, Jan. 30, Dallas, Texas; Sunday, Jan. 31, Atlanta, Ga.; Saturday, Feb. 6, Chicago; and Saturday, Feb. 13, New York. Those invited to the meetings are the chairmen and members of legislative committees of state medical societies and other key legislative men in the states. States to be represented at the San Francisco meeting are Oregon, California, Idaho, Nevada, and Washington; at Denver—Arizona, Colorado, Utah, Wyoming, Montana, Nebraska, North Dakota, South Dakota, Kansas, and Iowa; at Dallas—Arkansas, Louisiana, New Mexico, Oklahoma, and Texas; at Atlanta—Alabama, Florida, Georgia, North Carolina, South Carolina, Missouri, Mississippi, Tennessee, and Kentucky; at Chicago—Indiana, Illinois, Michigan, Minnesota, and Wisconsin; and at New York —Maine, Vermont, Massachusetts, New Hampshire, Rhode Island, Ohio, Pennsylvania, West Virginia, New York, Delaware, Connecticut, Maryland, New Jersey, and Virginia.

CONNECTICUT STATE MEDICAL SOCIETY

Under what is believed to be the first private charter granted by the Connecticut legislature, the Connecticut State Medical Society was incorporated in May, 1792. Long before the formation of a state society, however, groups of physicians had banded together to form medical organizations in various counties—New London, New Haven, and Litchfield—the records dating back to a meeting for that purpose in 1739 in New Haven. In February, 1780, a meeting was held in Sharon to form the "First Medical Society in the Thirteen United States of America since their Independence," but it was not until Jan. 5, 1784, that the New Haven County Medical Association was founded at a meeting called for the purpose of uniting "in petition with other county societies to the honorable legislative body for an act of incorporation the more effectually to regulate the practice of physic." A number of years and petitions later, the society finally found a way to establish the sincerity and integrity of its aims and eventually to succeed. In January, 1788, it voted that a collection of the most interesting cases that had been communicated to the society be made and that they be published in a pamphlet at the expense of the society. "Cases and Observations," said to be the first medical transactions published in America, acted as such a stimulus that a library was established, a librarian appointed, and the New Haven County society encouraged anew to seek a charter as an educational institution.

Headquarters of Connecticut State Medical Society.

The petition for the incorporation of the Medical Society of New Haven was again filed, in January, 1791, and again defeated; but the following year, through a petition centering attention on the improvement in the quality of medical education and service, the goal was reached. A charter was bestowed that gave the society the privilege to grant degrees in medicine, a privilege that it exercised until 1813, after the society had joined with the corporation of the Yale College to found the "Medical Institution of Yale College." Through the first half century of its history this institution was administered jointly by the society and the college, the society being largely responsible for choice of the faculty, for examining all candidates, and for determining those who should receive medical degrees. Each constituent county society was allowed to name a student to attend the school without charge.

Early in its course and pursuant to a communication on the care of lunatics, presented by one of its members, the society, under the leadership of its president, Dr. Mason Fitch Cogswell, initiated a crusade for the public care of the insane and in 1821 launched a project for the establishment of a hospital for the insane, voting some of its own funds for this purpose. As a result, the Hartford Retreat, still in operation as the Institute of Living, was chartered by the legislature. During these years Dr. Cogswell was instrumental also in incorporation of the Connecticut Asylum for the Education and Instruction of Deaf and Dumb Persons, the first school for the education of the deaf in America. The Hartford Retreat having been established, the society turned its attention to plans for a general hospital for the state, "to be so located as to best serve the interests of the Medical Institution of Yale College," and "Old North" was established in 1831.

Recent public service activities of the society include direction of a movement to create the Commission on the Chronically Ill, Aged, and Infirm (1945) and a State Commission on Mental Health (1953). In June, 1942, the society observed the sesquicentennial celebration of its founding. In commemoration of this occasion a book, "The Heritage of Connecticut Medicine," was published under the editorship of Dr. Herbert Thoms. It contains a host of great names in Connecticut medicine, including those of Drs. Jared Eliot, Elisha North, Nathan Smith, Horace Wells, Lyman Hall, William Beaumont, Jared P. Kirtland, William H. Carmalt, and William Henry Welch.

The society occupies its own building, built by contributions from its members in 1949 and containing such historical paintings as "The New Haven Coffee House," scene of the founding of the New Haven County Medical Association, from which the state society stemmed; "The Medical Institution of Yale College"; "The First Building of the Hartford Retreat"; "The General Hospital of Connecticut"; and "The Birthplace of William Beaumont." The Connecticut Hospital Association, the Connecticut Medical Examining Board, and the State Advisory Committee to the Selective Service also have offices in the building.

The society's 2,875 members constitute more than 90% of the physicians in Connecticut. Its officers are Dr. George H. Gildersleeve, Norwich, president; Dr. Harold M. Marvin, New Haven, president-elect; Dr. Thomas J. Danaher, Torrington, chairman of the council; Dr. Frank H. Couch, Cromwell, treasurer; and Dr. Creighton Barker, New Haven, executive secretary.

MEDICAL NEWS

ALABAMA

Cancer Seminar.—Under the joint sponsorship of the American Cancer Society, Alabama division, the Medical Association of the State of Alabama, Medical College of Alabama, Jefferson County Dental Association, and the Jefferson County Medical Society, a cancer seminar will be held at the Tutwiler Hotel, Birmingham, Jan. 27-28. On Wednesday the following presentations will be made:

- Role of the Dentist in Early Recognition of Oral Cancer, Frank F. Kanthak, Atlanta, Ga.
- Use of the Proctoscope in Detection of Cancer, Michael R. Deddish, New York
- Detection of Gastrointestinal Neoplasms, Ross Golden, New York.
- Detection of Early Carcinoma in the Female Genital Tract, John A. Wall, Houston, Texas.
- Evaluation of Present-Day Diagnosis and Treatment of Prostatic Cancer, William W. Scott, Baltimore.
- Fibrocystic Disease of the Breast as an Obstacle to the Early Detection of Breast Cancer, Frank E. Adair, New York.

A cocktail hour, 6 p. m., will precede the dinner, at which Dr. William Boyd, University of British Columbia, Vancouver, Canada, will present "Some Thoughts on Carcinogenesis." The Thursday program includes:

- Neoplastic Diseases in Childhood, John R. Schenken, Omaha.
- Early Detection of Cancer of the Lung, Richard H. Overholt, Brookline, Mass.
- Early Stages, Recognition and Treatment of Cancer of the Skin, Richard L. Sutton Jr., Kansas City, Mo.

CALIFORNIA

Stanford Appoints Medical Deans.—Dr. Windsor Cooper Cutting, faculty member of Stanford University School of Medicine, San Francisco, for 15 years and acting dean since July, 1953, has been appointed dean of the school. Dr. Jay Ward Smith has been named associate dean for professional services and Dr. George Bernard Robson associate dean for academic affairs. Dr. Cutting, a Stanford alumnus, succeeds Dr. Loren R. Chandler who, after serving for 20 years, resigned as dean in October, 1952, but continues as professor of surgery. Dr. Cutting has done research on virus diseases and antibiotics and is the author of two books and many papers in professional journals. He was named executive head of the department of pharmacology and therapeutics in 1950. Dr. Smith, who will be medical supervisor of Stanford University Hospitals, including the clinical services and laboratories, will also have charge of postgraduate medical training. He received his medical degree from Stanford in 1944 and served two years in the Army Medical Corps. While in practice in Millbrae, he was clinical instructor at Stanford Medical School, and for the past two years has been in Indianapolis doing research for a pharmaceutical firm and teaching medicine at the Indiana University School of Medicine. Dr. Robson received his medical degree from Stanford in 1934 and has been on the clinical teaching staff of the school for 16 years. As associate dean for academic affairs, he will be responsible for undergraduate medical instruction. He has been in private medical practice in San Francisco and served in the Army Medical Corps from 1943 to 1946.

COLORADO

Dr. Stead to Present Sewall Lectures.—Dr. Eugene A. Stead Jr., professor of medicine, Duke University School of Medicine, Durham, N. C., will present the annual Henry J. Sewall lectureship in the Denison auditorium, University of Colorado School of Medicine, Denver, Jan. 28. The lectureship, established in 1937, memorializes Dr. Henry J. Sewall, who came to Colorado in 1898 as professor of physiology at the Denver and Gross Medical College, served as professor of medicine at the University of Colorado from 1911 to 1918, and was professor emeritus from 1920 until his death in 1936. In 1887 Dr. Sewall discovered the principle of active immunity following inoculation with rattlesnake venom, pointing the way to the development of diphtheria and other antitoxins.

Members of the medical profession have been invited to attend the conferences and laboratory discussions which Dr. Stead will conduct at the school of medicine during the entire week of Jan. 25.

CONNECTICUT

Dr. Gallivan Honored.—Dr. John N. Gallivan, East Hartford, chief medical supervisor of the United Aircraft Corporation, whose leadership has created productive employment for more than 12,000 handicapped workers, has been cited for outstanding service by the President's Committee for Employment of the Physically Handicapped. The citation was presented to Dr. Gallivan at the semiannual meeting of the Connecticut State Medical Society's House of Delegates, Dec. 10, in New Haven. Dr. Gallivan's record of service for the handicapped began in June, 1937, when he became assistant chief medical supervisor of United Aircraft Corporation. A year later he was promoted to his present position and assumed responsibility for industrial health programs at the corporation's four main operating plants. Dr. Gallivan is a member of the Connecticut Committee for Employment of the Physically Handicapped and health director for civil defense in East Hartford. He is president of the East Hartford Medical Society, member of the board of directors of the Hartford County Medical Association, and the association's representative on the Council of the Connecticut State Medical Society. He is a member and past chairman of the state medical society's committee on industrial health and chairman of the society's committee on insurance.

GEORGIA

Ophthalmologists and Otolaryngologists Meet in Savannah.—The annual meeting of the Georgia Society of Ophthalmology and Otolaryngology will be held at General Oglethorpe Hotel, Wilmington Island, Savannah, March 5-6. The Friday program will open at 9 a. m. with the movie "Otoscopic Cinematography of the Tympanic Membrane and Middle Ear" by Dr. Paul H. Holinger, Chicago, and the Saturday program at the same time with the movie "Reconstruction of Canaliculi After Trauma and Disease" by Dr. Alston Callahan, Birmingham, Ala. Guest lecturers and their first presentations include:

- Lawrence R. Boies, Minneapolis, Serous Effusion. Chronic Suppurations.
- Francis E. LeJeune, New Orleans, Management of Malignancies of the Larynx.
- James H. Maxwell, Ann Arbor, Mich., Diseases of the Salivary Glands.
- Paul A. Chandler, Boston, Complications of Cataract Extraction.
- Algernon B. Reese, New York, Causes and Treatment of Defective Vision in Children.
- Henry P. Wagener, Rochester, Minn., Types of Retinal Arterial Occlusion: Their Diagnosis and Treatment.

On Friday, 6:30 p. m., cocktails in the Sunrise Lounge will precede a smorgasbord in the main dining room, which will be followed by General Oglethorpe's famed turtle races in the Crystal Ballroom. Registration fee, $20.

ILLINOIS

Cancer Grant.—At the annual meeting of the Illinois division of the American Cancer Society, a check for $41,250 was accepted, on behalf of the University of Chicago by Dr. Charles B. Huggins, professor of surgery. The money, which is the first payment on a $165,000 institutional grant, will be used to support principally a vast clinical research program, but some help will also be given to the continuing basic research program. Dr. Huggins spoke on scientific research in cancer.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

Chicago

Naval Medical Unit Programs.—On Jan. 26. 8 p. m., Dr. Matthew Taubenhaus will discuss "Hormonal Regulation of Granulation Tissue Formation" at the meeting of Volunteer Medical Company 9-20 at the U. S. Naval Reserve Armory, Randolph St. and the lake. The same group will be addressed Feb. 2 by Dr. Frederick Steigmann, who will speak on liver profile, and on Feb. 9 by Dr. Samuel L. Goldberg, whose topic will be [illegible] On Feb. 23 Dr. Townsend B. Friedman [illegible] Chemistry of Allergic Disease."

Biochemistry of Pathological Processes.—The University of Chicago announces a course in recent developments in biochemistry at University College, 19 S. LaSalle St., Wednesdays, 7:30 p. m. Lectures will be given on the anemias (Jan. 27), neoplastic growth: local biochemistry (Feb. 3) and systematic biochemical effects (Feb. 10), radiation (Feb. 17), and dental disease (Feb. 24). On March 3, Dr. Morris A. Lipton, assistant professor and resident in medicine (psychiatry), will deliver a lecture on mental disease. Endocrine disorders will be discussed by Dr. Delbert M. Bergenstal, assistant professor of medicine, March 10, and a discussion of electrolyte balance in health and disease will be offered by Lillian Eichelberger, Ph.D., associate professor in biochemistry and surgery on March 17.

IOWA

Second Heart Institute.—The second Institute on Cardiovascular Diseases sponsored by the Speakers Bureau of the Iowa State Medical Society, the Iowa Heart Association, and the State Department of Health, in cooperation with the State University of Iowa College of Medicine, Iowa City, is to be held at the Veterans Administration Hospital, Des Moines, Jan. 29. The afternoon program, 3-5 p. m., will be devoted to a consideration of vascular hypertension, with Dr. Arthur C. Corcoran, of the Cleveland Foundation, as principal speaker. The evening program, 7:30-9:30 p. m., will concern peripheral vascular disease, and Dr. Carl A. Moyer, St. Louis, will give the main address. A social hour will precede dinner at 6:30 p. m. The third Institute on Heart Diseases is to be held in Sioux City in May.

LOUISIANA

Appoint Professor of Dermatology.—Dr. Charles B. Kennedy, who has been affiliated with the Louisiana State University School of Medicine, New Orleans, since 1934, has been named professor of dermatology to replace the late Dr. James K. Howles as head of the department. During World War II Dr. Kennedy was with the 64th General Hospital, the school of medicine unit, in Africa and Italy. He was awarded the Bronze Star medal by the Mediterranean Theater Commander for writing a history of skin diseases and syphilis in this area and for organizing clinics. He formerly served as an assistant dermatologist at the Columbia University College of Physicians and Surgeons, New York, for three years and has been a visiting physician at Charity Hospital of Louisiana.

MASSACHUSETTS

Meeting on Heart Disease.—Dr. Paul D. White, Boston, will serve as moderator for the following program on the management of heart disease, which the Norfolk district of the Massachusetts Medical Society will present at 8:15 p. m., Jan. 26, in the Boston Medical Library (Ware Hall), 8 The Fenway:

Benedict F. Massell, Boston, Rheumatic Heart Disease and Subacute Bacterial Endocarditis.
Louis Wolff, Boston, Coronary Heart Disease.
Gordon S. Myers, Boston, Consideration of Surgery for Heart Disease.

Course on Pulmonary Function.—A postgraduate course on the measurement of pulmonary function in health and disease, sponsored by the American Trudeau Society in cooperation with the Massachusetts Tuberculosis and Health League, Harvard Medical School, Boston University School of Medicine, and Tufts College Medical School, Boston, will be held in March at the Boston City Hospital. Registration is limited. The fee is $50, payable to the Massachusetts Tuberculosis and Health League. A limited number of scholarships covering partial or total expenses will be available through the courtesy of the National Tuberculosis Association. Subjects include mechanical and physiologic aspects of respiration, methods of analysis of pulmonary function, cardiopulmonary relationships, alterations of pulmonary function as a result of disease, alterations of pulmonary function as a result of therapy, and clinical application of tests of pulmonary function. Physicians accepted for this course may obtain information regarding hotel accommodations from Mr. Nelson R. Kraemer, Executive Director, Massachusetts Tuberculosis and Health League, 131 Clarendon St., Room 802, Boston 16.

MICHIGAN

Carl E. Buck Dies.—Carl E. Buck, Dr. P. H., professor of public health, University of Michigan School of Public Health, and formerly field director of the American Public Health Association, died in Ann Arbor, Nov. 21, 1953, aged 62. Dr. Buck had been on the staff of the School of Public Health, after 17 years of service as field director. He had participated in scores of public health studies, principally at the state level, and had directed the Colorado state survey that resulted in a reorganization of the state department of health. Between 1924 and 1930 Dr. Buck held several positions in the Detroit Department of Health. He was a member of the 1912 U. S. Olympic team and during World War I was a pilot in the U. S. Air Corps. After the war he was appointed a member of the U. S. Typhus Fever Commission in the Balkan countries. On Nov. 11, 1953, the American Public Health Association bestowed on Dr. Buck, former president, Michigan Public Health Association, the Sedgwick memorial award.

MINNESOTA

Annual Johnston Lecture.—Andrew T. Rasmussen, Ph.D., professor emeritus of neuroanatomy, will present the annual J. B. Johnston lecture Jan. 27 at the University of Minnesota Center for Continuation Study. His subject will be "Recent Advances in the Morphology and Significance of the Cerebral Cortex."

Society News.—Newly elected officers of the Southwestern Minnesota Medical Society include Dr. Roy F. Pierson, Slayton, president, Dr. Roger P. Hallin, Worthington, president-elect, Dr. Harold A. Christensen, Jackson, vice-president, and Dr. Olaf M. Heiberg, Worthington, secretary (reelected).

Chamber of Commerce Honors Dr. Sherman.—Dr. Charles L. Sherman, who has practiced in Luverne for 50 years, was guest of honor at a reception given by the Luverne Chamber of Commerce, Sept. 24, 1953, the evening being designated as "Dr. Sherman Night." The program included a talk by Dr. E. Mendelssohn Jones, St. Paul. The Southwestern Minnesota Medical Society adopted a resolution expressing high praise and deep appreciation for the service Dr. Sherman has rendered to humanity and the profession of medicine in his community and state.

MISSOURI

Case of Epidemic Hemorrhagic Fever.—According to the U. S. Public Health Service, Dr. James R. Amos, director, Missouri Department of Public Health and Welfare, has reported epidemic hemorrhagic fever in a 24-year-old man. The patient left a highly endemic area of the disease in Korea, Nov. 14, 1953, arrived by air in the United States four days later, and was almost immediately discharged from military service. There is no evidence of person-to-person transmission of epidemic hemorrhagic fever, and the arthropod suspected of transmitting infection is not known to be present in the United States.

NEW JERSEY

Symposium on Diseases of the Liver.—A symposium on diseases of the liver, stressing the treatment of cirrhosis and its complications, ascites and esophageal varices, will be given at the Jersey City Medical Center, Jan. 27, 2-5 p. m. Speakers will include Drs. Arthur H. Blakemore, John L. Madden, and J. James Smith, New York, Carroll M. Leevy, Jersey City, and Jacob K. Berman, Indianapolis.

Postgraduate Lectures at Cohanzick Country Club.—The postgraduate education committee of the Cumberland County Medical Society will present the following lectures by faculty members of the University of Pennsylvania School of Medicine, Philadelphia, at the Cohanzick Country Club, 2 miles south of Bridgeton on the Fortescue-Port Norris Road:

Jan. 26, 9:30 p. m.., Early Management of Obscure Fever in Children, Milton Rapoport.
Feb. 16, 4 p. m., Management of Cardiac Emergencies, Charles C. Wolferth.
March 16, 4 p. m., Diagnosis and Management of Gastric Lesions, Isidor S. Ravdin.

Each lecture will be followed by a discussion period. The cost of the series is $10. Information may be obtained from Dr. W. Sherman Garrison Jr., 108 W. Commerce St., Bridgeton.

NEW YORK

Public Cancer Forum.—"The Curability of Cancer" was the subject of the public cancer forum recently conducted by the Yonkers Academy of Medicine at the Commerce High School auditorium in Yonkers. Support was given by the Westchester Cancer Committee and other professional and social agencies, and the Yonkers Board of Education passed an endorsing resolution and approved the public forum as a part of its adult education program. Religious groups of all denominations also helped publicize this forum, as did the Yonkers Chamber of Commerce and the CIO.

University News.—Dr. Curtland Chester Brown Jr., Glenmont, has been appointed assistant dean of the Albany Medical College. In addition to administrative duties, Dr. Brown holds an instructorship in the department of medicine and is a member of the staff of the Albany Hospital.——The University of Buffalo has appointed Dr. Samuel Feinstein chief psychiatrist of the Chronic Disease Research Institute and medical director of therapy of the Information and Rehabilitation Center for Alcoholism. Dr. Feinstein has been affiliated with the New York State Department of Mental Hygiene, the St. Lawrence State Hospital and A. Barton Hepburn Hospital, Ogdensburg, and New York State Teachers College, Potsdam.

New York City

Another Unit in Medical Center.—The new Medical Science Building of the New York University-Bellevue Medical Center, now under construction between 13th and 34th streets and First Avenue and the Franklin D. Roosevelt Drive, is scheduled for completion by early summer. This building will accommodate classrooms and teaching laboratories for N. Y. U. College of Medicine and its Post-Graduate Medical School; complete research laboratories for all departments of the schools and for the various institutes of the medical center; and other facilities. The Medical Science Building is the second new building of a $28,500,000 medical center serving New York and the surrounding community. The Institute of Physical Medicine and Rehabilitation is completed and in operation. Still to be constructed are Alumni Hall, the Hall of Residence, and the 20-story, 600-bed University Hospital.

NORTH CAROLINA

Personal.—Dr. Edward C. Frank, associate professor of psychiatry at the University of North Carolina School of Medicine, Chapel Hill, has entered private practice in Louisville. Dr. Frank was formerly adjunct psychiatrist at the Psychosomatic Institute at Michael Reese Hospital, psychiatrist for the David B. Rotman Research Laboratory of the Psychiatric Institute of the Municipal Court of Chicago, and consultant to Portal House outpatient clinic, Chicago, and the alcoholic unit of the mental health centers of the state of Illinois. His new address is Francis Building, Louisville.

Free Transportation for Eye Bank.—The Eye Bank for Restoring Sight, Inc., of North Carolina, chartered by the state in 1951 to secure and supply eyes to all North Carolina hospitals and physicians, is an affiliate of the Eye Bank for Sight Restoration, Inc., of New York. Three members of the Medical Society of the State of North Carolina form an advisory committee, and each airport town in the state has a regional medical director who aids in disseminating knowledge about the eye bank. Eyes are carried free of charge by Piedmont Airlines, Eastern Airlines, Capital Airlines, and by private taxi and limousine services in the state.

SOUTH CAROLINA

Symposium on Cardiovascular Disease.—The South Carolina Heart Association in conjunction with the Greenville General Hospital and Greenville County Medical Society will present a symposium on cardiovascular disease, Feb. 1. Participants will include Dr. Robert P. Grant, National Heart Institute, Bethesda; Dr. Leslie B. Hohman, professor of psychiatry, Duke University School of Medicine, Durham, N. C.; Dr. Harold Feil, clinical professor of medicine, Western Reserve University School of Medicine, Cleveland; and Dr. Elliott V. Newman, professor of experimental medicine, and Dr. H. William Scott Jr., professor of surgery and surgeon-in-chief, Vanderbilt University School of Medicine, Nashville, Tenn. Drs. Feil and Scott will be the after-dinner speakers Monday evening, when the Greenville County Medical Society holds its monthly meeting in the ballroom of the Poinsett Hotel.

VIRGINIA

Fifty Year Club.—Certificates carrying life membership were recently awarded by the Medical Society of Virginia to the following physicians, who graduated 50 years ago: Joseph LeCenne DeCormis, Accomac; Courtney Edmond, Clifton Forge; William Wallace Gill, Richmond; William H. Howard, Hampton; Louis Knight Leake, Goochland; William Cline Moomaw, Bedford; Lawson Otwood Powell, Seaford; Marvin Pierce Rucker, Richmond; John Bonney Shipp, Norfolk; Benjamin Clinton Shuler, Shenandoah; Homer Amos Spitler, Middleburg; Harry Benjamin Stone, Roanoke; William Joshua Sturgis, Nassawadox; Charles Walter Thomas, Floyd; Edward Victor Valz, Philadelphia; Cary Elphus Via, Norfolk; A. McGarvey Wallace, Gate City; and Elbert Patton Whited, Honaker.

WISCONSIN

Society News.—Officers elected at the recent meeting of the Wisconsin Society of Anesthesiologists include Dr. Robert K. Dodge, Janesville, president, Dr. Paul E. Campbell, Waukesha, president-elect, and Dr. William R. Kreul, Racine, secretary-treasurer.

Course on Surgical Considerations in General Practice.—This course will be conducted under the direction of Dr. Erwin R. Schmidt, professor of surgery, University of Wisconsin Medical School, Feb. 9-11 at State of Wisconsin General Hospital. The course will stress preoperative and postoperative care, general surgical procedures, the relationship of surgery to anesthesiology, antibiotic therapy, and the presence of complicating conditions. The course will be limited to 40 registrants. Advance registration is required, and $5 registration fee must be forwarded to Dr. Robert C. Parkin, University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6. The balance of the fee ($15) may be paid at the time of registration, Feb. 9. Make all checks payable to the University of Wisconsin.

GENERAL

Psoriasis Research Association.—The recently organized Psoriasis Research Association has announced as its first project a survey of 2,000 cases of psoriasis, to be conducted with the voluntary help of physicians and statisticians from the University of California Hospital, San Francisco. The association, a nonprofit organization, has a threefold program: (1) to encourage and finance research, (2) to keep the membership informed of the progress of the association's program and that of the medical profession, by sending periodic bulletins to each member, and (3) to stimulate public education concerning psoriasis. Membership is open to all persons with psoriasis and to everyone interested in this work (annual fee $5). The organization does not conduct research but will award research grants on recommendation of its medical advisory board, consisting of

Drs. Eugene M. Farber, San Francisco, Maximilian E. Obermayer, Los Angeles, Thomas H. Sternberg, Los Angeles, and Frances A. Torrey, San Francisco. Headquarters of the foundation are at 44 Page St., San Francisco 2.

Fellowships in Endocrinology.—The Endocrine Society has announced its 1954 program of awards and fellowships. Each member may make one nomination for each fellowship or award. A nomination should be accompanied by a statement of the importance of the nominee's contribution to endocrinology and by a bibliography of his most important publications, with reprints if possible. Nominations should be made on special application forms which may be obtained from the secretary, Dr. Henry H. Turner, 1200 N. Walker St., Oklahoma City, and returned to him not later than March 1. The Ayerst, McKenna and Harrison fellowship is offered in the amount of $5,000 and the Ciba award in the amount of $1,800, with the provision that, if within 24 months of the date of the award, the recipient chooses to use it toward further study in a laboratory other than that in which he is at present working, it will be increased to $2,500. This award is offered to an investigator, not more than 35 years of age, in the field of clinical or preclinical endocrinology. The Schering Fellowship in Endocrinology will not be awarded in 1954 in order that it may accumulate toward a $5,000 fellowship to be awarded in 1955. Fellowships may be awarded to a person who possesses a Ph.D. or an M.D. degree or to a candidate for either of these degrees. Each candidate for fellowship must (1) present evidence of scientific ability as attested by studies completed or in progress and/or the recommendation of responsible persons, (2) submit a program of proposed study, (3) indicate one or more institutions where the proposed program will be followed, and (4) submit statements of approval from the investigators with whom he proposes to conduct his research. He must serve full time if awarded a fellowship. A small amount of time (10-15%) may be alloted for course work or for participation in teaching, the latter purely on a voluntary basis.

Lasker Public Health Awards.—At a recent meeting of the American Public Health Association the following winners of the 1953 Lasker awards were announced: Michael Heidelberger, Ph.D., professor of immunochemistry, Columbia University College of Physicians and Surgeons, New York, "for decisive contributions to mankind in developing a new subscience, the precise measuring tool of immunochemistry"; Dr. Hans A. Krebs, professor of biochemistry, University of Sheffield, England, "discoverer of the urea and citric acid cycles which are basic to our understanding of how the body converts food into energy"; Earle B. Phelps, B.S., (who died shortly after his election for the award), research engineer at the University of Florida, Gainesville, "in recognition of a lifetime of pioneering and leadership in public health and sanitary science"; Dr. Felix J. Underwood, Jackson Miss., state health officer of Mississippi for 30 years, "for demonstrating how a long-sustained, sound, and expanding pattern of public health services benefits a people"; and George Wald, Ph.D., professor of biology, Harvard University, Cambridge, "in recognition of his outstanding achievements in explaining the chemistry of vision in man."

Group awards were given to the Division of Research Grants of the National Institutes of Health, U. S. Public Health Service, "for the outstanding administration of a research grants program enabling thousands of capable scientists in hundreds of institutions to contribute knowledge substantially advancing the nation's health" and to the University Laboratory of Physical Chemistry Related to Medicine and Public Health, Harvard University, "for basic protein studies leading to fundamental achievements in the field of blood separation, and more particularly, in gamma globulin preparation."

Individual winners received cash prizes of $1,000, leather-bound citations, and gold statuettes of the Winged Victoria of Samothrace. Group winners received silver statuettes. The Lasker awards are made annually through the American Public Health Association by the Albert and Mary Lasker Foundation.

LATIN AMERICA

Seminars in Medicine of Mexico.—Following the annual meeting of the American College of Physicians in Chicago, April 5-9, a series of lectures and presentations is being arranged at the National Institute of Cardiology of Mexico and at the Hospital de Enfermedades de la Nutricion. The scientific programs will be presented during the mornings, April 12-14. The schedule calls for departure from Chicago at 10:40 a. m., April 10, by DC-6 Flagship of the American Airlines, with arrival at Mexico City at 5:35 p. m. The price, $386.15, includes: round trip air transportation from Chicago; double room with twin beds and bath at all hotels, two in room; all meals outside Mexico City, and all breakfasts, lunches, and other meals as specified in the city; sightseeing as detailed in private automobiles; English speaking guides and admissions; all tips when on tours and all tips to porters and bellmen for handling baggage; U. S. Federal tax; Mexico air ticket tax; local taxes; Mexico tourist card; and seminar fee. Single room is $17.75 additional. For information, write to Leon V. Arnold, 36 Washington Square West, New York 11.

FOREIGN

German Course in Tropical Medicine and Hygiene.—A course in tropical medicine, tropical hygiene, pathology, and medical parasitology will be held Feb. 8 to April 10 at the Bernard Nocht Institute for Ship and Tropical Diseases in Hamburg. Physicians, veterinarians, and zoologists are eligible to attend. Information on the course can be obtained from the institute, Bernhard-Nocht Strasse 74, Hamburg 4, Germany.

CORRECTION

Endameba Histolytica.—In the Clinical Note "Leukopenia Following Fumagillin Treatment for Amebiasis," in The Journal, Dec. 19, 1953, page 1446, in the eighth line in the Report of Case, the term Escherichia histolytica is erroneous and should be Endameba histolytica.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1954 Annual Meeting, San Francisco, June 21-25.

1954 Clinical Meeting, Miami, Florida, Nov. 30-Dec. 3.

1955 Annual Meeting, Atlantic City, N. J., June 6-10.

1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.

1956 Annual Meeting, Chicago, June 11-15.

Annual Congress on Industrial Health, Brown Hotel, Louisville, Ky., Feb. 24-25. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Congress on Medical Education and Licensure, Palmer House, Chicago, Feb. 7-9. Dr. Edward L. Turner, 535 N. Dearborn St., Chicago 10, Secretary.

National Conference on Rural Health, Baker Hotel, Dallas, Texas, Mar. 4-6. Mrs. Arline Hibbard, 535 N. Dearborn St., Chicago 10, Secretary.

American Academy of Allergy, Shamrock Hotel, Houston, Texas, Feb. 1-3. Dr. Alan G. Cazort, 1425 West 7th St., Little Rock, Ark., Secretary.

American Academy of Forensic Sciences, Drake Hotel, Chicago, Feb. 25-27. Prof. Ralph F. Turner, Michigan State College Dept. of Police Administration, East Lansing, Mich., Secretary.

American Academy of Occupational Medicine, John Marshall Hotel, Richmond, Va., Feb. 11-12. Dr. Leonard J. Goldwater, 600 W. 168th St., New York 32, Secretary.

American Academy of Orthopaedic Surgeons, Palmer House, Chicago, Jan. 23-28. Dr. John R. Norcross, 122 S. Michigan Blvd., Chicago 3, Secretary.

American College of Radiology, Drake Hotel, Chicago, Feb. 5. Mr. William C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

American Federation for Clinical Research:

- Southern Section, Jung Hotel, New Orleans, Jan. 29. Dr. William Parson, University of Virginia School of Medicine, Charlottesville, Va., Chairman.
- Western Section, Auditorium, University of Oregon Medical School, Portland, Ore., Jan. 28. Dr. I. S. Edelman, University of California Medical Center, San Francisco Hospital, San Francisco 15, Secretary.

American Laryngological, Rhinological and Otological Society: Western Section, University of Oregon Medical School, Portland, Ore., Feb. 6. Dr. Guy L. Boyden, 1735 N Wheeler Ave., Portland 12, Ore., Chairman.

American Orthopsychiatric Association, Hotel Commodore, New York, March 11-13. Dr. Marion F. Langer, Room 210, 303 Lexington Ave., New York 16, Executive Secretary.

American Protestant Hospital Association, Palmer House, Chicago, Feb. 10-12. Mr. Albert G. Hahn, Protestant Deaconess Hospital, Evansville, Ind., Executive Secretary.

American Radium Society, The Homestead, Hot Springs, Va., March 14-16. Dr. Robert E. Fricke, 102 Second Ave. S.W., Rochester, Minn., Secretary.

Central Surgical Association, Statler Hotel, Detroit, Feb. 18-20. Dr. Robert M. Zollinger, University Hospital, Columbus 10, Ohio, Secretary.

Chicago Medical Society Annual Clinical Conference, Palmer House, Chicago, March 2-5. Dr. Maurice M. Hoeltgen, 86 East Randolph St., Chicago, Secretary.

Conference of Teachers of Clinical Radiology, Walton Room, Drake Hotel, Chicago, Feb. 6. Dr. Aubrey O. Hampton, 20 North Wacker Drive, Chicago, Chairman.

Dallas Southern Clinical Society, Dallas, March 15-18. Dr. T. Haynes Harvill, 433 Medical Arts Bldg., Dallas 1, Texas, Secretary.

Michigan Clinical Institute, Sheraton-Cadillac Hotel, Detroit, March 10-12. Dr. L. Fernald Foster, 606 Townsend St., Lansing 15, Mich., Secretary.

Mid-South Post Graduate Medical Assembly, Hotel Peabody, Memphis, Tenn., Feb. 9-12. Dr. Thurman Crawford, 869 Madison Ave., Memphis, Tenn., Secretary.

National Conference on Care of the Long-Term Patient, Edgewater Beach Hotel, Chicago, March 18-20. Dr. Dean W. Roberts, 615 N Wolfe St., Baltimore 5, Director.

National Conference on Trichinosis, A. M. A. Headquarters, Chicago, March 1. Dr. S. E. Gould, Wayne County General Hospital, Eloise, Mich., Chairman.

National Society for the Prevention of Blindness, Jefferson Hotel, St. Louis, March 10-12. Dr. F. M. Foote, 1790 Broadway, New York 19, Executive Director.

Northwest Society for Clinical Research, Portland, Ore., Jan. 28. Dr. Arthur L. Rogers, 1216 S.W. Yamhill St., Portland, Ore., Secretary.

Regional Meetings, American College of Physicians:

Topeka, Kans., March 19. Dr. William C. Menninger, 3617 West 6th Ave., Topeka, Kansas, Governor.

Richmond, Va., Feb. 25. Dr. Charles M. Caravati, 807 West Franklin St., Richmond 20, Va., Governor.

Southern California, Riverside, Feb. 13-14. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

Sectional Meetings, American College of Surgeons:

Charlotte, N. C., Hotel Charlotte, Feb. 1-3. Dr. Thomas D. Sparrow, 403 North Tryon St., Charlotte 2, N. C., Chairman.

French Lick Springs, Indiana, French Lick Springs Hotel, March 15-17. Dr. Carl H. McCaskey, 20 N. Meridian St., Indianapolis 4, Chairman.

Reno, Nev., Riverside Hotel, Feb. 25-26. Dr. Kenneth F. Maclean, 120 N. Virginia St., Reno, Nev., Chairman.

Omaha, Neb., Hotel Fontenelle, March 1-4. Dr. Earl A. Connolly, 107 South 17th St., Omaha, Chairman.

Society of University Surgeons, Sheraton Hotel, Rochester, N. Y., Feb. 11-13. Dr. C. Rollins Hanlon, 1325 South Grand Blvd., St. Louis, Secretary.

Southeastern Surgical Congress, Tutwiler Hotel, Birmingham, Ala., March 8-11. Dr. Benjamin T. Beasley, 45 Edgewood Ave. S.E., Atlanta, Ga., Secretary.

Western Society for Clinical Research, Portland, Ore., Jan. 29-30. Dr. Herbert N Hultgren, Stanford Hospital, San Francisco 15, Secretary.

Western Society of Electro-Encephalography, Del Monte Lodge, Pebble Beach, Calif., March 7-8. Dr. Sylvester N. Berens, 902 Boren Ave., Seattle, Secretary.

FOREIGN

Association of Surgeons of Great Britain and Ireland, Leeds, England, May 13-15, 1954. Dr. Henry W. S. Wright, 45 Lincoln's Inn Fields, London W.C.2, England, Honorary Secretary.

British Medical Association, Glasgow, Scotland, July 1-9, 1954. Dr. A. Macrae, B.M.A. House, Tavistock Square, London, W.C.1, England, Secretary.

Canadian Medical Association, Vancouver, B. C., Canada, June 14-18, 1954. Dr. T. C. Routley, 244 St. George St., Toronto 5, Ont., Canada, General Secretary.

Conference of International Union Against Tuberculosis, Madrid, Spain, Sept. 26-Oct. 2, 1954. Secretariat, Escuela de Tisiologia, Ciudad Universitaria, Madrid, Spain.

Congress of International Anesthesia Research Society, Los Angeles, Calif., U. S. A., Oct. 4-7, 1954. For information write: Dr. T. H. Seldon, 102-110 Second Avenue S. W., Rochester, Minn., U. S. A.

Congress of International Association for the Prevention of Blindness, New York, N. Y., U. S. A., Sept. 12-17, 1954. Professor Franceschetti, 2 Avenue Mirmot, Geneva, Switzerland, Secretary-General.

European Society of Cardiovascular Surgery, Edinburgh, Scotland, July 9-10, 1954. For information address: Mr. A. J. Slessor, Department of Surgery, University New Building, Edinburgh 8, Scotland.

Health Congress of the Royal Sanitary Institute, Scarborough, England, April 27-30, 1954. Mr. P. Arthur Wells, Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W.1, England, Secretary.

International Cancer Congress, Sao Paulo, Brazil, July 23-29, 1954. Prof. A. Prudente, 171 rua Benjamin Constante, Sao Paulo, Brazil, President.

International Conference on Thrombosis and Embolism, Basle, Switzerland, July 20-24, 1954. Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

International Congress on Child Psychiatry, University of Toronto, Toronto, Ontario, Canada, Aug. 13-14, 1954. Miss Helen Speyer, International Association for Child Psychiatry, 1790 Broadway, New York 19, New York, U. S. A., Executive Officer.

International Congress of Clinical Pathology, Washington, D. C., U. S. A., Sept. 6-10, 1954. Dr. Robert A. Moore, Washington University School of Medicine, St. Louis 10, Missouri, U. S. A., Chairman, Committee on Arrangements.

International Congress on Diseases of the Chest, Barcelona, Spain, Oct. 4-8, 1954 Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Illinois, Executive Secretary.

International Congress on Group Psychotherapy, Toronto, Ont., Canada, Aug. 12-14, 1954. Dr. J. L. Moreno, Room 327, 101 Park Ave., New York 17, N. Y., U. S. A., Director of Organizing Committee.

International Congress on Gynecology and Obstetrics, Geneva, Switzerland, July 26-31, 1954. Dr. H. de Watteville, Maternité Hôpital Cantonal, Geneva, Switzerland, President.

International Congress of Hematology, Paris, Sept. 6-11, 1954. Dr. Jean Bernard, 86 rue d'Assas, Paris 6^e, France, Secretary.

International Congress of the History of Medicine, Rome and Salerno, Italy, Sept. 13-20, 1954. For information write: Segreteria XIV Congresso Internazionale di Storia della Medicina, Instituto di Storia della Medicine, Citta Universitaria, Rome, Italy.

International Congress of Hydroclimatism and Thalassotherapy, Dubrovnik, Yugoslavia, May 8-16, 1954. Prof. C. Plavsic, Zeleni venac 1, Belgrade, Yugoslavia, Secretary General.

International Congress of Industrial Medicine, Naples, Italy, Sept. 13-19, 1954. Professor Scipione Caccuri, Director, Institute of Industrial Medicine Policlinico, Naples, Italy, Chairman, Organizing Committee.

International Congress of Internal Medicine, Stockholm, Sweden, Sept. 15-18, 1954. Professor Anders Kristenson, Karolinska Sjukhuset, Stockholm 60, Sweden, Secretary-General.

International Congress of International College of Surgeons, São Paulo, Brazil, April 26-May 2, 1954. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U. S. A., Secretary-General.

International Congress on Mental Health, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

International Congress of Military Medicine and Pharmacy, Buenos Aires, Argentine, April 21-28, 1954. Direcion General de Sanidad Militar, Pozos 2045, Buenos Aires, Argentine.

International Congress of Nutrition, Amsterdam, Netherlands, Sept. 14-18, 1954. For information write: Dr. M. van Eekelen, Centraal Instituut voor Voedingsonderzoek T.N.O., 61 Catharynesingel, Utrecht, Netherlands.

International Congress of Ophthalmology, University of Montreal and McGill University, Montreal, Canada, Sept. 10-11, 1954, and Waldorf-Astoria, New York, N. Y., U. S. A., Sept. 12-17, 1954. Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minnesota, U. S. A., Secretary-General.

International Congress of Orthopedic Surgery and Traumatology, Berne, Switzerland, Aug. 30-Sept. 3, 1954. For information write: Professor M. Dubois, Isle-Hospital, Berne, Switzerland.

International Congress of Psychology, Montreal, Canada, June 7-12, 1954. For information write: Prof. H. S. Langfeld, International Union of Scientific Psychology, Eno Hall, Princeton University, Princeton, N. J., U. S. A.

International Congress for Psychotherapy, Zurich, Switzerland, July 21-24, 1954. Dr. H. K. Fierz, Theaterstrasse 12, Zurich 1, Switzerland, Secretary General.

International Congress of the Sociedad de Médicos Internos, Residentes y Becarios del Instituto Nacional de Cardiologia de Mexico, Acapulco, Mexico, April 21-24, 1954. For information address: Dr. Jorge Soberón Acevedo, Avenida, Cuauhtemoc No. 300, Mexico, D. F., Mexico.

International Gerontological Congress, London and Oxford, England, July 12-22, 1954. Prof. R. E. Tunbridge, General Infirmary, Department of Medicine, The University, Leeds, England, President.

International Poliomyelitis Congress, Rome, Italy, Sept. 6-10, 1954. Mr. Stanley E. Henwood, 120 Broadway, New York 5, N. Y., U. S. A., Executive Secretary.

International Society of Blood Transfusion, Paris, France, Sept. 12-19, 1954. For information write: Colonel Julliard, Société Internationale de Transfusion Sanguine, 53 Boulevard Diderot, Paris 12^e, France.

International Society for Cell Biology, Leiden, Netherlands, Sept. 2-9, 1954. Professor Peter J. Gaillard, University of Leiden, Leiden, Netherlands, Secretary.

International Society of Geographical Pathology, Washington, D. C., U. S. A., Sept. 6-10, 1954. Professor Fred C. Roulet, Hebelstrasse 24, Basle, Switzerland, Secretary-General.

Irish Medical Association, Killarney, Ireland, July 7-10, 1954. Dr. P. J. Delaney, 10, Fitzwilliam Place, Dublin, Ireland, Medical Secretary.

Journees Medicales, Paris, France, April 21-25, 1954. For *information* write: Secretariat of the Journees, 12, rue Pierre-Geofroix, Colombes (Seine) France.

Latin American Congress on Gynecology and Obstetrics, Sao Paulo, Brazil, July 10-15, 1954. Prof. Dr. Jairo Ramos, av. Brigaderio Luiz Antonio, 278-8º andar, Sao Paulo, Brazil, Chairman of Organizing Committee of Medical Congresses.

Latin American Congress of Otorhinolaryngology, Caracas, Venezuela, Feb. 21-25, 1954. Dr. Victorino Marquez Reveron, Centro, Medico, Caracas, Venezuela, Secretary-General.

Latin American Congress of Physical Medicine, Medellin, Columbia, South America, Feb. 15-20, 1954. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York 21, N. Y., U. S. A., Executive Director.

Pan American Congress of Child Welfare and Pediatrics, Sao Paulo, Brazil, July 15-21, 1954. For information address: Dr. Jairo Ramos, Avenida Brigaderio Luiz Antonio 278-8º andar, Sao Paulo, Brazil.

Pan American Congress of Gastroenterology, Sao Paulo, Brazil, July 19-24, 1954. *For information* address: Dr. Jairo Ramos, Avenida Brigadeiro Luiz Antonio 278-8º andar, Sao Paulo, Brazil.

Pan American Congress of Ophthalmology (Interim), São Paulo, Brazil, June 17-21, 1954. Dr. Moacyr E. Alvaro, São Paulo, Brazil, President.

Pan American Congress of *Otorhinolaryngology* and Bronchoesophagology, Mexico, D.F., Mexico, Feb. 28-March 4, 1954. Dr. Maximo Garcia Castañeda, Humboldt 17, Mexico 1, D.F., Mexico, Secretary-General.

Pan American Congress of Veterinary Medicine, *Sao Paulo, Brazil*, April 3-10, 1954. Dr. Joao Soares Veiga, Rua Pires da Mota 159, Sao Paulo, Brazil, Chairman of Organizing Committee.

Pan-Pacific Surgical Congress, Honolulu, Hawaii, Oct. 7-18, 1954. Dr. F. J. Pinkerton, Suite 7, Young Bldg., Honolulu 13, Hawaii, Director General.

Sectional Meeting, American College of Surgeons, London, England, May 17-19, 1954. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Ill., U. S. A., Secretary.

South American Congress of Angiology, Sao Paulo, Brazil, July 1954. For information write: Dr. Rubens Carlos Mayall, Rua Senador Vergueiro 73, Rio de Janeiro, Brazil, S. A.

World Congress of Cardiology, Washington, D. C., and Bethesda, Md., U. S. A., *Sept. 12-17, 1954. Dr. L. W. Gorham, 44 East 23d St., New* York 10, N. Y., U. S. A., Secretary-General.

World Congress of International Society for the Welfare of Cripples, Scheveningen-The Hague, Netherlands, Sept. 13-17, 1954. Secretariat: Miss H. P. Post, Pieter Lastmarkade 37, Amsterdam Z, Netherlands.

World Federation of Occupational Therapists, Edinburgh, Scotland, August 17, 1954.

World Medical Association, Rome, Italy, Sept. 26-Oct. 2, 1954. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

Alabama: *Examination.* Montgomery, June 22-24, 1954. Sec., Dr. D. G. Gill, 537 Dexter Ave., Montgomery.

Arkansas:* *Examination.* Little Rock, June 10-11. Sec., Dr. Joe Verser, Harrisburg. *Eclectic.* Little Rock, June 11-12. Sec., Dr. O. L. *Atkinson,* 2528 Central Ave., Hot Springs National Park.

California: *Written.* Los Angeles, March 15-18; San Francisco, June 21-24; San Diego, Aug. 23-26; Sacramento, Oct. 18-21. *Oral.* Los Angeles, March 13; San Francisco, June 19; San Diego, Aug. 21; Los Angeles, Nov. 20. *Oral and Clinical Examination for Foreign Medical School Graduates.* Sec., Dr. Louis E. Jones, 1020 N Street, Sacramento.

Colorado:* *Examination.* Denver, June 8-9. Final date for filing applications is May 8. *Reciprocity.* Denver, April 13. Final date for filing applications *is March 13. Exec. Sec., Mrs. Beulah H. Hudgens, 831* Republic Bldg., Denver 2.

Connecticut:* *Examination.* Hartford, March 9-10. Secretary to the Board, Dr. Creighton Barker, 160 St. Ronan St., New Haven. *Homeopathic.* Derby, March 9-10. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

District of Columbia:* *Examination.* Washington, May 10-11. Deputy Director, Mr. Paul Foley, Department of Occupations and Professions, 1740 Massachusetts Ave., N.W., Washington, D. C.

Georgia: *Examination and Reciprocity.* Atlanta and Augusta, June. *Sec.,* Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

Guam: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Director of Medical Services, Guam Memorial Hospital, Agana

Illinois: *Examination and Reciprocity.* Chicago, Jan. 26-28; April 6-8; June 22-24, and Oct. 5-7. Supt. of Registration, Mr. Fredric B. Selcke, Capitol Bldg., Springfield.

Indiana: *Examination.* Indianapolis, June 16-18. Exec. Sec., Miss Ruth V. Kirk, 538 K of P Bldg., Indianapolis.

Kansas: *Examination and Reciprocity.* Kansas City, June 9-10. Sec., Dr. O. W. Davidson, 872 New Brotherhood Bldg., Kansas City.

Maine: *Examination and Reciprocity.* Portland, March 9-10. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

Maryland: *Examination.* Baltimore, June 15-18. Sec., Dr. E. H. Kloman, 1215 Cathedral St., Baltimore 1.

Michigan:* *Examination.* Detroit and Ann Arbor, June 1954. Sec., Dr. J. Earl McIntyre, 202-4 Hollister Bldg., Lansing 8.

Mississippi: *Examination and Reciproctiy.* Jackson, June. Asst. Sec., Dr. R. N. Whitfield, Old Capitol, Jackson 113.

Missouri: *Examination.* Jefferson City, Feb. 18-19. *Reciprocity.* Jefferson City, Feb. 8. Exec. Sec., Mr. John A. Hailey, P. O. Box 4, Jefferson City.

Montana: *Reciprocity.* Helena, April 5. *Examination.* Helena, April 6-7. *Sec., Dr. S. A. Cooney, 214 Power Block, Helena.*

Nebraska:* *Examination.* Omaha, June 1954. Director, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln.

New Hampshire: *Examination and Reciprocity.* Concord, March 10. Sec., Dr. John S. Wheeler, 107 State House, Concord.

New Jersey: *Examination,* Trenton, June 15-18. Sec., Dr. E. S. Hallinger, 28 W. State St., Trenton.

New Mexico:* *Examination and Reciprocity.* Santa Fe, April 12-13. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

New York: *Examination.* Albany, Buffalo, Syracuse and New York City, Feb. 16-19. Sec., Dr. Stiles D. Ezell, 23 S. Pearl St., Albany.

Ohio: *Examination.* Columbus, June 14-16. *Reciprocity.* Columbus, April 13. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus.

Oklahoma:* *Examination.* Oklahoma City, June 9-10. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Pennsylvania: *Examination.* Philadelphia, January 1954. Acting Secretary, Mrs. Margaret G. Steiner, Box 911, Harrisburg.

South Carolina: *Reciprocity.* Columbia, Feb. 1. Sec., Mr. N. B. Heyward, 1329 Blanding St., Columbia.

South Dakota:* *Examination.* Sioux Falls, Jan. 19-20, 1954. Reciprocity can be obtained at any time between meetings of board. Executive Secretary, Mr. John C. Foster, 300 *First National Bank Bldg., Sioux* Falls.

Tennessee:* *Examination.* Memphis, March 24-25. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis.

Texas: *Examination and Reciprocity.* Fort Worth, June 21-23. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Ft. Worth 2.

Utah: *Reciprocity.* Salt Lake City, Feb. 16. Asst. Director, Mr. Frank E. Lees, 314 State Capitol Bldg., Salt Lake City 1.

Vermont: *Examination.* Burlington, Jan. 28-30. Sec., Dr. F. J. Lawliss, Richford.

Virginia: *Examination and Reciprocity.* Richmond, June 16. Address: Virginia Board of Medical Examiners, 631 First St., S.W., Roanoke.

Wyoming: *Oral Examination and Reciprocity.* Cheyenne, Feb. 1. Sec., Dr. *Franklin D. Yoder, State Office Bldg.,* Cheyenne.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

Alaska: On application. Juneau or other towns in Territory as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

Arizona: *Examination.* Tucson, March 16. Sec., Mr. Herbert D. Rhodes, University of Arizona, Tucson.

Colorado: *Examination.* Denver, March 3-4. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 18.

Connecticut: *Examination.* New Haven, Feb. 13. Address: State Board of Healing Arts, 52 Whitney Ave., New Haven 10.

Florida: *Examination.* Gainesville, June. Sec., Mr. M. W. Emmel, University of Florida, Box 340, Gainesville.

Michigan: *Examination.* Detroit and Ann Arbor, Feb. 12-13. Sec., Mrs. Anne Baker, 410 W. Allegan St., Lansing 15.

Nebraska: *Examination.* Omaha, May 4-5. Director, Mr. Husted K. Watson, 1009 State Capitol Bldg., Lincoln 9.

Oklahoma: *Examination.* Oklahoma City, April 16-17. Sec., Dr. Clinton Gallaher, 813 Braniff Bldg., Oklahoma City.

Oregon: *Examination.* Portland, March 6, June 5, Sept. 11 and Dec. 4. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

Rhode Island: *Examination.* Providence, Feb. 10. Administrator, Division of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

Texas: *Examination.* April 1954. Location determined by number of *applicants from different sections of the state. Sec., Brother Raphael* Wilson, C.S.C., 407 Perry-Brooke Bldg., Austin.

Wisconsin: *Examination.* Madison, April 3 and June 5. Final date for filing application is March 26 and May 28. Sec., Dr. W. H. Barber, 621 Ransom St., Ripon.

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*Basic Science Certificate required.

DEATHS

Binion, Richard ⊕ Milledgeville, Ga.; born in Sparta, Ga., July 19, 1892; University of Maryland School of Medicine, Baltimore, 1915; also a graduate in pharmacy; member of the Southeastern Surgical Congress, of which he was formerly a member of the council, and the American Psychiatric Association; fellow of the American College of Surgeons; past president of the Baldwin County Medical Society; past president of the Georgia Railroad Surgeons Association; served during World War I; formerly chairman of the Baldwin County Board of Health and vice-chairman of the state board of public welfare; at one time physician for the Georgia State College for Women, Georgia Military College, and the Milledgeville State Training Schools for Boys; formerly member of the board of governors of the Milledgeville State Hospital; retired owner of the Richard Binion Clinic Hospital; for many years associated with the Allen's Invalid Home; died Oct. 22, aged 62, of arteriosclerotic heart disease.

Golden, Waldo Emerson ⊕ Commander, U. S. Navy, retired, Berkeley, Calif.; born at Flora, Ill., June 9, 1893; University of Illinois College of Medicine, Chicago, 1917; entered the Medical Corps, U. S. Navy, as a lieutenant, junior grade; promoted to lieutenant in 1920 and to lieutenant commander in 1925; placed on the retired list of officers of the Navy July 1, 1941, and immediately recalled to active duty; was promoted to commander in the medical corps, Jan. 3, 1942, and released from active duty July 1, 1945; served during World Wars I and II; during his 28 years of naval service, served in the U. S. ships Ramapo and Chaumont, at the Naval Medical School, Washington, D. C., the Naval Training Station and Naval Hospital, Great Lakes, Ill., the Naval Hospital, Mare Island, Calif., the Recruiting Station, San Francisco, and the Naval Supply Depot in Oakland, Calif.; died Nov. 27, aged 60.

Graves, Marvin Lee ⊕ Houston, Texas; born in Bosqueville, Texas, March 26, 1867; Bellevue Hospital Medical College, New York, 1891; professor emeritus of internal medicine at the University of Texas School of Medicine, Galveston; fellow of the American College of Physicians; member of the House of Delegates of the American Medical Association from 1914 to 1919; past president of the State Medical Association of Texas; for many years consulting physician at the John Sealy Hospital in Galveston; from 1898 to 1905 superintendent of the Southwestern Insane Asylum in San Antonio; in 1918 received the L.L.D. degree from Southern Methodist University in Dallas; formerly medical director, American General Life Insurance Company; died in Methodist Hospital Nov. 19, aged 86, of encephalomalacia.

Griffitts, Thomas Houston Dow ⊕ medical director, U. S. Public Health Service, retired, Fort Lauderdale, Fla.; born Oct. 26, 1878; Chattanooga (Tenn.) Medical College, 1903; past president of the Florida Public Health Association; in charge of the Henry R. Carter Memorial Laboratory of the U. S. Public Health Service, Savannah, Ga., when it was opened in 1937, and remained until 1939; twice served the city of Savannah as acting health officer; formery chief quarantine officer of Puerto Rico and the Virgin Islands, with headquarters in San Juan; retired from the U. S. Public Health Service Nov. 1, 1942, after 30 years as a medical officer; formerly director of the Dade County Health Unit, Miami; died in the U. S. Marine Hospital, Baltimore, Oct. 26, aged 75.

Acker, Paul Jerome Moeris ⊕ Mobile, Ala.; Medical College of Alabama, Mobile, 1892; fellow of the American College of Surgeons; formerly on the faculty of his alma mater; for many years county health officer; at one time associated with the U. S. Public Health Service; served as chief of staff at the City Hospital; died Nov. 28, aged 82, of carcinoma of the colon.

Anderson, Joseph R., Sumrall, Miss.; Memphis (Tenn.) Hospital Medical College, 1902; a member and formerly president of the school board; one of the founders of the Bank of Sumrall and served on the board of directors; died in the Methodist Hospital, Hattiesburg, Nov. 11, aged 77.

Annunziata, Augustine James ⊕ New York City; University of Buffalo School of Medicine, 1924; served during World War II; on the staff of the Mother Cabrini Hospital; died Nov. 19, aged 54, of heart failure.

Ashford, Hartwell T., Clinton, Miss.; Hospital College of Medicine, Louisville, 1903; served as physician for Mississippi College; died Dec. 15, aged 75.

Aubuchon, William E., Frankclay, Mo.; American Medical College, St. Louis, 1909; died Oct. 28, aged 74.

Baker, Robert Whitney ⊕ Chicago; University of Illinois College of Medicine, Chicago, 1945; affiliated with the Veterans Administration Hospital in Livermore, Calif.; died in Fort Miley Hospital in San Francisco Nov. 4, aged 33, of bacterial endocarditis.

Bauersfeld, Emil George ⊕ Bethesda, Md.; Baltimore Medical College, 1911; died Dec. 13, aged 64.

Baumann, Harry Floyd, Meridian, Pa.; University of Pittsburgh School of Medicine, 1913; died recently, aged 66.

Bayer, Ira Eugene Jr., ⊕ Baltimore; University of Maryland School of Medicine, Baltimore, 1934; died Oct. 24, aged 47.

Baylor, John Ward ⊕ Bethesda, Md.; Johns Hopkins University School of Medicine, Baltimore, 1918; formerly associate professor of laryngology and otology at Johns Hopkins University School of Medicine in Baltimore, where he was affiliated with the Woman's Hospital, Church Home and Infirmary, and the Union Memorial Hospital; died Nov. 25, aged 60, of cardiovascular disease.

Bearer, Albert John, New Kensington, Pa.; Cincinnati College of Medicine and Surgery, 1897; died in the Citizens General Hospital Sept. 4, aged 82.

Bennett, Edward, Monroe, Ore.; California Medical College, San Francisco, 1895; St. Louis College of Physicians and Surgeons, 1900; served on the staff of the Good Samaritan Hospital in Corvallis; died Nov. 27, aged 79, of angina pectoris.

Benson, Andrew Ludwig ⊕ Philipsburg, Pa.; Jefferson Medical College of Philadelphia, 1915; member of the Radiological Society of North America; owner and chief surgeon of the Benson Sanatorium; died Dec. 3, aged 61.

Bogen, Eugene Feilen, Rochester, N. Y.; Chicago College of Medicine and Surgery, 1913; University of Kharkov Faculty of Medicine, Russia, 1918; specialist certified by the American Board of Psychiatry and Neurology; member of the American Psychiatric Association; served during World War II, and on the staffs of various Veterans Administration hospitals; died Dec. 17, aged 67.

Boggs, Lloyd Kennedy ⊕ Birmingham, Ala.; University of Georgia Medical Department, Augusta, 1924; died in the Jefferson Hospital Oct. 16, aged 56, of melanoma with metastasis.

Bregel, Fred Louis ⊕ St. Paul; University of Minnesota Medical School, Minneapolis, 1918; served on the rating board of the Veterans Administration at Fort Snelling, Minn., and St. James (Minn.) Hospital; died in St. Joseph Hospital Nov. 13, aged 64, of cerebral thrombosis.

Bright, Fred L., Battle Creek, Mich.; Michigan College of Medicine and Surgery, Detroit, 1904; died in the Lelia Y. Post Montgomery Hospital Oct. 15, aged 79, of cardiac insufficiency.

⊕ Indicates Member of the American Medical Association.

Brooks, Thomas Gibson ⊕ Aiken, S. C.; University of Georgia Medical Department, Augusta, 1924; served during World War II; fellow of the American College of Surgeons; on the staff of Aiken County Hospital; died in the University Hospital, Augusta, Ga., Oct. 27, aged 53, of rheumatoid arthritis.

Brown, Crawford MacDowell ⊕ Rochester, N. Y.; University of Pittsburgh School of Medicine, 1931; served during World War II; affiliated with Highland Hospital; died Dec. 3, aged 50.

Carrington, Samuel Macon ⊕ Oxford, N. C.; Rush Medical College, Chicago, 1931; served during World War II; died in Durham Oct. 29, aged 49, of cerebral hemorrhage and leukemia.

Conner, Leonidas J., Kirksville, Mo.; Marion-Sims College of Medicine, St. Louis, 1892; died in the Grim Smith Memorial Hospital Oct. 8, aged 84, of coronary occlusion.

Cooper, John Hightower ⊕ Commerce, Ga.; Atlanta College of Physicians and Surgeons, 1913; member of the Florida Medical Association; served during World War I; practiced in St. Petersburg, Fla.; formerly affiliated with Wesley Long Hospital in Greensboro, N. C.; died in the Commerce Hospital Nov. 14, aged 66, of coronary occlusion and cirrhosis of the liver.

Coughlin, Francis Joseph ⊕ Arlington, N. J.; McGill University Faculty of Medicine, Montreal, Canada, 1917; died Nov. 28, aged 58, of cerebral hemorrhage, diabetes mellitus, and hypertension.

Cullison, Robert M., ⊕ Winston Salem, N. C.; State University of Iowa College of Medicine, Iowa City, 1917; member of the Iowa State Medical Society; served during World Wars I and II; chief medical officer of the regional office of the Veterans Administration in North Carolina; died Nov. 4, aged 62, of coronary thrombosis and arteriosclerosis.

Dalton, William Nicholson ⊕ Winston-Salem, N. C.; North Carolina Medical College, Davidson, 1904; died in the City Memorial Hospital Oct. 23, aged 72, of coronary occlusion and arteriosclerosis.

Donovan, Ophius Poston, Bismarck, Ill.; St. Louis College of Physicians and Surgeons, 1903; died in the Lake View Hospital, Danville, recently, aged 74, of heart and kidney disease.

Duval, Joseph Berwick ⊕ Houma, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1903; died Dec. 8, aged 77.

Earl, Franklin Daniels ⊕ Ogdensburg, N. Y.; Bellevue Hospital Medical College, New York, 1895; an Associate Fellow of the American Medical Association; formerly school physician and district health officer; affiliated with A. Barton Hepburn Hospital; died Nov. 23, aged 82, of cerebral hemorrhage and arteriosclerosis.

Farrar, Charles O., ⊕ Nettleton, Miss.; Memphis (Tenn.) Hospital Medical College, 1901; on the staff of North Mississippi Community Hospital in Tupelo; died Dec. 4, aged 81, of dilatation of the heart.

Fernald, Arthur May ⊕ Concord, N. H.; Baltimore Medical College, 1898; died Oct. 31, aged 82, of coronary thrombosis and hypertension.

Feuerstein, Harry B., ⊕ St. Albans, N. Y.; University and Bellevue Hospital Medical College, New York, 1917; served during World War I; affiliated with the University Hospital in New York City, where he died Dec. 1, aged 59, of coronary thrombosis.

Frink, Raymond Peter, Redfield, S. D.; Northwestern University Medical School, Chicago, 1903; served during World War I; formerly physician in the Indian Service; died in the State School and Home for Feebleminded Oct. 25, aged 76, of chronic heart disease and glomerulonephritis.

Fuller, Melvin Francis ⊕ Aberdeen, Wash.; University of Oregon Medical School, Portland, 1933; served during World War II; fellow of the American College of Surgeons; on the staff of St. Joseph's Hospital, where he died Nov. 13, aged 49, of adenocarcinoma.

Goodale, Banks H. ⊕ Jacksonville, Fla.; Southern College of Medicine and Surgery, Atlanta, 1912; died in St. Luke's Hospital Oct. 8, aged 65, of bronchopneumonia.

Harris, Harold Shelton ⊕ Troy, Mo.; Washington University School of Medicine, St. Louis, 1925; served during World War II; died Oct. 23, aged 56.

Harris, Lurty Noel, Wheeling, W. Va.; University of Maryland School of Medicine, Baltimore, 1897; died in the Ohio Valley Hospital Sept. 17, aged 79, of arteriosclerosis.

Harris, Monroe, Bloomington, Ill.; Northwestern University Medical School, Chicago, 1909; practiced in Benton; died in the Mennonite Hospital Sept. 13, aged 83, of cerebral hemorrhage.

Hawkins, Martin Cassetty Sr., ⊕ Parkdale, Ark.; University of Louisville, Ky., Medical Department, 1893; affiliated with Lake Village Infirmary in Lake Village, and Hawkins Clinic Hospital in Searcy; died Nov. 28, aged 84, of pneumonia.

Henderson, Harold Burrows ⊕ Denver; Northwestern University Medical School, Chicago, 1923; formerly assistant professor of obstetrics and gynecology at University of Colorado School of Medicine; fellow of the American College of Surgeons; served during World War I; past chief of staff of Presbyterian and Booth Memorial hospitals; died Sept. 24, aged 64, of coronary thrombosis.

Henry, James R., Kansas City, Mo.; Kansas City Hahnemann Medical College, 1907; died in the Research Hospital Oct. 13, aged 69.

Hill, Robert Burns ⊕ Beverly Hills, Calif.; University of Missouri School of Medicine, Columbia, 1909; fellow of the American College of Physicians; affiliated with California Hospital; died Nov. 12, aged 67, of carcinoma of the larynx.

Hoffman, Burton Louis, Chicago; University of Chicago, the School of Medicine, 1941; assistant professor of neurosurgery at his alma mater; lieutenant commander in the U. S. Navy during World War II; resigned from the Navy on May 30, 1947; formerly a resident in neurosurgery at the University of Chicago Clinics; died in Albert Merritt Billings Hospital Dec. 2, aged 37, of adrenal cortical carcinoma with pulmonary and hepatic metastases.

Hunter, Charles Elverton ⊕ Mansfield, Ohio; Starling Medical College, Columbus, 1902; on the courtesy staff at the Mansfield General Hospital, where he died Nov. 22, aged 76, of leukemia.

Hunter, John Alexander ⊕ Dover, N. H.; University of Vermont College of Medicine, Burlington, 1911; died Oct. 2, aged 66, of cerebral hemorrhage and arteriosclerosis.

Kisor, Frank Hays, Winter Haven, Fla.; State University of Iowa College of Medicine, Iowa City, 1895; died in Lake Alfred Oct. 24, aged 88, of uremia, nephrosclerosis, and arteriosclerosis.

Krejsa, Oldrich, Cedar Rapids, Iowa; State University of Iowa College of Medicine, Iowa City, 1901; died Aug. 8, aged 78, of myocardial infarction.

Landreth, John J. ⊕ Bruce, Miss.; Memphis (Tenn.) Hospital Medical College, 1898; died Nov. 13, aged 85, of a heart attack.

Langdale, Charles Andrew ⊕ Coral Gables, Fla.; Medical College of Ohio, Cincinnati, 1903; served on the faculty of the University of Cincinnati College of Medicine; fellow of the American College of Surgeons; formerly practiced in Cincinnati, where he was affiliated with Good Samaritan and Christ hospitals; died in Coral Gables Hospital Oct. 26, aged 79, of arteriosclerotic heart disease and hypertension.

Lange, Carl Wilhelm, Albany, N. Y.; Hessische Ludwigs-Universität Medizinische Fakultät, Giessen, Hesse, Germany, 1907; died Oct. 26, aged 70.

Leake, William Samuel Jr., ⊕ Lafayette, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1937; member of the Tennessee State Medical Association; served during World War II; died Nov. 10, aged 43, of coronary occlusion.

Lewis, Benjamin Jefferson, Montgomery, Ala.; Medical College of Alabama, Mobile, 1899; died Nov. 20, aged 79, of injuries received in an automobile accident.

Lieberman, William, Jamaica, N. Y.; New York Homeopathic Medical College and Flower Hospital in New York, 1917; died suddenly Aug. 10, aged 58.

Loomis, Edgar Webb ⊕ Dallas, Texas; Southwestern University Medical College, Dallas, 1910; specialist certified by the American Board of Pediatrics; member of the American Academy of Pediatrics; formerly city health officer; served in France during World War I; for two years a medical missionary in Alaska for the Episcopal Church; affiliated with Methodist, Parkland, and St. Paul's hospitals; died Nov. 18, aged 67.

Lovelady, William Henry ⊕ Hartselle, Ala.; Medical College of Alabama, Mobile, 1897; died Nov. 29, aged 84.

McAfee, Frederick W., ⊕ Detroit; University of Michigan Homeopathic Medical School, Ann Arbor, 1904; served during World War I; died Nov. 28, aged 75, of myocardial infarction.

McBratney, Emmett William ⊕ Tucson, Ariz.; Washington University School of Medicine, St. Louis, 1903; an Associate Fellow of the American Medical Association; member of the Missouri State Medical Association; at one time practiced in St. Louis; died in Columbia, Mo., Oct. 24, aged 78.

McGehee, Henry Thomas ⊕ Birmingham, Ala.; Medical College of Alabama, Mobile, 1904; died in the Lloyd Noland Hospital, Fairfield, Oct. 18, aged 78, of myocardial infarction.

McIver, Bert Andrew ⊕ Lowry, Minn.; University of Minnesota Medical School, Minneapolis, 1929; died in the Glenwood (Minn.) Community Hospital, Oct. 31, aged 56, of acute bronchopneumonia.

Mason, William C., Murphy, N. C.; Tennessee Medical College, Knoxville, 1904; died Oct. 23, aged 81, of cerebrovascular accident and arteriosclerosis.

Matthews, William Thomas, New Vienna, Ohio; Medical College of Ohio, Cincinnati, 1901; member of the board of directors of the New Vienna Bank; died in the White Cross Hospital, Columbus, Nov. 30, aged 82, of myocarditis and pulmonary congestion following a hip fracture received in a fall.

Menninger, Charles Fredric ⊕ Topeka, Kan.; the Hahnemann Medical College and Hospital, Chicago, 1889; past president of the Shawnee County Medical Society; member of the Endocrine Society, American Psychiatric Association, and the Central Neuropsychiatric Association; served as president of the Topeka Board of Health; founder of the Menninger Clinic and chairman of the board of trustees of the Menninger Foundation; died Nov. 28, aged 91, of cerebral thrombosis.

Mills, Edmund Dumas ⊕ Beaumont, Texas; University of Texas School of Medicine, Galveston, 1916; died recently, aged 61, of coronary occlusion.

Moylan, David John, Bala-Cynwyd, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1906; served on the staffs of Wills Eye Hospital, St. Vincent's Hospital for Women and Children, and St. Joseph's Hospital; died Dec. 3, aged 80, of coronary occlusion.

Mullen, Robert Ambrose ⊕ Tampa, Fla.; Marquette University School of Medicine, Milwaukee, 1926; member of the American Society of Anesthesiologists and the State Medical Society of Wisconsin; served during World War II; died in St. Joseph's Hospital Nov. 5, aged 53, of coronary thrombosis.

Mumford, Samuel Howard, New Bern, N. C.; Howard University College of Medicine, Washington, D. C., 1926; died Oct. 23, aged 56, of hypertensive cardiovascular disease.

Nemon, Leon ⊕ Portland, Maine; Thüringische Landesuniversität Medizinische Fakultät, Jena, Thuringia, Germany, 1928; died Oct. 4, aged 51, of coronary occlusion.

Partlow, Kenneth Lawrence ⊕ Olympia, Wash.; Rush Medical College, Chicago, 1914; formerly affiliated with the U. S. Public Health Service; president of the Washington State Medical Association 1950-1951; past president of the Thurston-Mason Counties Medical Society; fellow of the American College of Surgeons; on the staff of St. Peter's Hospital; died Oct. 14, aged 66, of carcinoma of the prostate.

Phelps, John Quincy, Cheyenne, Wyo.; Kentucky School of Medicine, Louisville, 1888; died in the Memorial Hospital Oct. 16, aged 82, of cerebral thrombosis.

Pisciotta, Joseph, Brooklyn; New York Homeopathic Medical College and Hospital, New York, 1914; during World War II, for three years, a member of the board of examiners for a Selective Service Board in Bay Ridge; served on the staffs of St. Mary's and Norwegian Lutheran Deaconesses' Home and Hospital, where he died Nov. 19, aged 66, of pneumonia and acute heart disease.

Prescott, Henry Frederick ⊕ Cressona, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1929; served during World War II and in the Korean conflict; school director and member of the board of health; affiliated with Pottsville and Lemos B. Warne Hospital and Clinic in Pottsville; an associate staff member, Good Samaritan Hospital in Lebanon, where he died Oct. 18, aged 51, of injuries received in an automobile accident.

Roberts, David Allen ⊕ Swannanoa, N. C.; University of Oklahoma School of Medicine, Oklahoma City, 1932; served during World War II; affiliated with Veterans Administration Hospital in Oteen, where he died Nov. 25, aged 50, of coronary thrombosis.

Russell, Thomas, Grand Rapids, Minn.; University of Toronto Faculty of Medicine, Toronto, Canada, 1890; died Oct. 15, aged 92.

Schoenfeld, Siegfried M., ⊕ New Hyde Park, N. Y.; Medizinische Fakultät der Universität, Vienna, Austria, 1921; member of the American College of Chest Physicians and the American Trudeau Society; on the staff of Terrace Heights Hospital in Hollis; died Nov. 16, aged 57, of acute cardiac failure.

Scott, Harry Alexander ⊕ Lincoln, Neb.; University of Buffalo School of Medicine, 1917; specialist certified by the American Board of Radiology; member of the Radiological Society of North America and the American College of Radiology; manager, Veterans Administration Hospital, where he died Nov. 12, aged 63, of hypertensive cardiovascular disease.

Shatto, Arthur Blair ⊕ St. Petersburg, Fla.; College of Physicians and Surgeons, Baltimore, 1895; member of the Medical Society of the State of Pennsylvania; died in the Mound Park Hospital, Oct. 11, aged 82, of arteriosclerotic heart disease.

Sheets, Raymond F., Carthage, Ill.; Keokuk (Ia.) Medical College, College of Physicians and Surgeons, 1908; served as district health officer, and as county physician; on the staff of the Memorial Hospital; died suddenly Nov. 25, aged 74, of acute coronary thrombosis.

Spiro, Harry, San Francisco; Cooper Medical College, San Francisco, 1904; at one time on the faculty of Stanford University School of Medicine; served during World War I; on the staff of St. Mary's Hospital; died Nov. 18, aged 78, of heart disease.

DIED WHILE IN MILITARY SERVICE

Meister, Adam George ⊕ Sarasota, Fla.; born in Orlando, Fla., Aug. 6, 1924; College of Medical Evangelists, Loma Linda and Los Angeles, 1948; certified by the National Board of Medical Examiners; interned at James M. Jackson Memorial Hospital in Miami, where he later served a residency; in 1952 secretary-treasurer of the Florida chapter of the College of Medical Evangelists Alumni Association; on the staff of the Sarasota Municipal Hospital, serving as secretary of the obstetric section during his last year there; called to active duty as a first lieutenant with the Army in October, 1952; joined the paratroopers the following December, assigned to the 82nd Airborne Division as a regimental surgeon, Fort Bragg, N. C., where he died Nov. 17, aged 29, after an aircraft accident.

GOVERNMENT SERVICES

ARMY

Civilian Physicians Win Army Awards.—The Certificate of Appreciation of the Department of the Army was awarded by Major Gen. George E. Armstrong, Surgeon-General, at ceremonies Nov. 20, to Dr. G. Robert Coatney, of the laboratory of tropical diseases, National Microbiological Institute, U. S. Public Health Service, and Dr. Ralph Jones Jr., assistant professor of research medicine, University of Pennsylvania Medical School, Philadelphia, for research in connection with the development and testing of primaquine, an antimalarial drug.

Dr. Coatney was awarded the certificate for outstanding patriotic civilian service to the Army from January, 1951, to June, 1953, when "he was in charge of malaria chemotherapy studies undertaken by the Surgeon-General to explore the curative effectiveness of several 8-aminoquinolines in prisoner volunteers at Atlanta, Georgia, and in Korean returnees at Fort Benning, and of other tests initiated to determine the antimalarial properties of daraprim," another antimalarial drug. Dr. Jones was awarded the certificate for outstanding patriotic civilian service to the Army from June, 1951, to April, 1953, when "he was responsible for supervising the clinical testing of primaquine as a curative drug for Korean vivax malaria in Army hospitals at Fort Knox, Fort Meade, Camp Breckinridge, Fort Dix, and in the Naval Hospital at the Marine Base at Camp LeJeune." The citation continues, "The efficiency and speed with which primaquine was evaluated on a large scale in its field trials were the direct result of Dr. Jones' efforts in organizing and correlating activities and investigations at the military medical installations concerned."

PUBLIC HEALTH SERVICE

Medical Social Workers.—There are about 3,825 persons actively engaged in medical social work in the U. S. today, according to "Health Manpower Sourcebook, Section III: Medical Social Workers" just released by the Public Health Service. It is said that there are three times as many positions open as there are persons to fill them and that 800 to 1,000 graduates a year will be needed to fill the vacancies. The sourcebook presents, for the first time, a comprehensive study of the employment, educational background, and personal characteristics of medical social workers. The largest number of medical social workers (about 41%) are located in the northeast section of the country. Three-fourths of the total are employed in hospitals and clinics, and the two next largest groups work with the physically handicapped and other special groups. Most medical social workers are women (93%), although the number of male graduates in social work courses is increasing.

Copies of this book are available from the Superintendent of Documents, Government Printing Office, Washington 25, D. C., at 40 cents each (Public Health Service Publication No. 263, Section 3).

Airlines Sanitary Guide.—The first published sanitary guide written expressly for airlines has just been published by the Public Health Service. It is intended as a guide to the air transport industry and for use by the Public Health Service and cooperating state health departments in their periodic inspections of aircraft and servicing facilities. Public law 410 of the 78th Congress authorizes the Public Health Service to prepare regulations for the prevention of the transmission or spread of communicable disease across state lines or into the United States from foreign countries. Mr. Leonard M. Board, chief, division of sanitation, said, "It is hoped that designers, builders, and operators of commercial aircraft will use this handbook as a guide for 'building in' features which will permit sanitary operation."

The airline and catering industries cooperated with the Public Health Service in the preparation of this material. The handbook deals with the review of construction plans covering sanitary facilities both for aircraft and for terminal facilities, sanitary equipment and practices at catering points, sanitary food and beverage service, ice-handling, refuse management on aircraft, sanitary control of drinking water, disposal of wastes from aircraft, and other items of sanitation. The publication is for sale by the Superintendent of Documents, Government Printing Office, Washington 25, D. C.

MISCELLANEOUS

Science Foundation Appoints Committee on Government-University Relationships.—The National Science Foundation, Washington, D. C., has appointed an advisory committee to consider the effects of government support to colleges and universities on their research and teaching functions. The appointment of the committee was authorized by the National Science Board, which selected its own chairman, Chester I. Barnard, to be the chairman of the committee. The other members are:

Arthur S. Adams, president, American Council on Education.
Vannevar Bush, president, Carnegie Institution of Washington.
James S. Coles, president, Bowdoin College.
Harold W. Dodds, president, Princeton University.
Conrad A Elvehjem, dean of the Graduate School, University of Wisconsin.
T. Keith Glennan, president, Case Institute of Technology.
Virgil M. Hancher, president, State University of Iowa.
William V. Houston, president, Rice Institute.
Clark Kerr, chancellor, University of California, Berkeley.
C. N. H. Long, professor of physiology, Yale University.
Don Price, associate director, the Ford Foundation.
Julius A. Stratton, Provost, Massachusetts Institute of Technology.

During World War II and the postwar emergency period many millions of dollars have been spent by government agencies for services in technological developments in universities and colleges. Relatively few millions of dollars have been provided for research and education in the sciences, although in many instances these institutions are uniquely fitted to carry on such activities. Statistics compiled by the foundation indicate that during the year ending June 30, 1952, educational institutions received almost 300 million dollars from federal agencies for development and research. Approximately 136 million dollars (46%) was spent by instructional departments. Of the rest, about 3 million dollars was spent by affiliated research organizations, $12,500,000 by agricultural experiment stations, and $143,500,000 by research centers, which were administered by educational institutions for specific federal agencies but organizationally segregated from the normal activities of the institutions. According to the foundation a total of 225 educational institutions received some federal support for development and research in 1951-1952. These included 86 universities, 95 liberal arts colleges, 41 professional-technical schools, and 3 other educational institutions.

FOREIGN LETTERS

CHILE

Artificial Hibernation.—Dr. Eduardo Escalona Sylvester in the *Bulletin of the Vina del Mar Hospital* (July) reports five cases of artificial pharmacological hibernation during operation. A subtotal gastrectomy for peptic ulcer was performed on two of the patients, and the other three were operated on for extensive cancer of the esophagus. The night before the operation 25 mg. of Phenergan (10-[2-dimethylamino-1-propyl] phenothiazine) with 0.1 gm. of phenobarbital were injected. On the day of the operation, two hours before the anesthesia was begun, 25 mg. of Phenergan was given intramuscularly and one hour later a modification of Laborit's classic "cocktail" was given intravenously. The duration of the administration of the "cocktail" was about one hour, after which period the author used 0.35 to 0.4 gm. of thiopental to produce anesthesia; 80 units of Intocostrin (an extract of Chondodendren tomentosum) and 40 mg. of gallamine (Flaxidil) were given in order to obtain a curare-like effect. Anesthesia was then continued by means of cyclopropane and ether. Blood transfusion was given in the usual manner. The patient's blood pressure usually fell slowly to between 50 and 90 mm. Hg, his pulse rate ranged from 100 to 120, and his skin was dry, pink, and warm during the operation. The postoperative course of these patients was smoother than that of patients of the same type operated on without hibernation. Their rectal temperature was maintained at 93.2 F for 20 hours by the administration of Diparcol (10-[2-dimethylaminoethyl] phenothiazine). The pulse rate, blood pressure, and general condition of the patient were always good. His breathing was deep and quiet; consciousness was not regained till several hours after the operation. In no case was it found necessary to administer analgesics to control pain.

Environmental Study of Normal and Delinquent Boys.—Dr. Alberto Robinson and Miss O. Hinojosa studied the environment of 56 boys, 40 of whom were between 7 and 12 and 16 of whom were between 13 and 17 years of age. A study of the father and/or mother or guardian was also made. Alcoholism was present in about the same percentage of the fathers of the normal and the delinquent boys. Delinquency was overwhelmingly more frequent among the parents of the delinquent children. Neuropsychiatric disturbances were about equally distributed among the parents of both groups. Birth was normal in 52 of the total group. The psychomotor development of the child was difficult to evaluate, but seemed to be abnormal in only 12. The psychological importance of breast feeding in the prevention of frustrations, anxieties, and neurotic complexes was confirmed. Among the delinquents artificial feeding was much more frequent than among the normal boys, most of whom had been breast fed. Of the 39 children who were legitimate, 21 were normal, but, of the 17 who were illegitimate, only 7 were normal. Of 15 who were reared in institutions, 12 were delinquent. In the neighborhood from which the delinquent boys came there were more saloons than in the environment of the control group. Absence from school was more frequent among the delinquent than among the control group. The relation between the parents and the child was given special consideration. An unfavorable attitude of either the son or one of the parents was almost always found in the delinquent group. In some cases this amounted to open hostility. Lack of affection between the delinquent boys and their parents was noted in every case. The authors concluded that juvenile delinquency results from the complex interworking of a variety of causes.

LONDON

Economy in Drugs.—At a recent Health Services conference in London, details were given of an experiment in the Bristol Royal Hospital that seems to have caused an appreciable saving in the hospital's expenditure on drugs. An economy committee was set up and consisted of a physician, surgeon, pediatrician, pathologist, and pharmacist. The committee met monthly, and at each meeting the cost of particular drugs was discussed. If expenditure on any one item was considered excessive, steps were taken, if possible, to curtail its use. One of the methods used by the committee was to instruct resident medical officers in the correct use of drugs, especially antibiotics, and a booklet was prepared that outlined the essential use of each drug and showed its cost. By careful instruction of nurses, there was a marked saving in the amount of alcohol, iodine, dressings, and antiseptics used in the hospital. It was estimated that the committee saved about £1,000 a year.

Prehistoric Diets.—In the second Albert Reckitt Archaeological Trust lecture before the British Academy recently, Prof. Grahame Clarke made some interesting references to the dietetic and drinking habits of prehistoric man. In north Germany, for instance, in the late glacial period, reindeer was almost the entire source of meat, and in east Yorkshire, during the preboreal phase of the post-glacial period, the red deer was the main source of meat. Evidence obtained from a necropsy on an early Iron Age man from a bog in Jutland showed that he ate a gruel containing barley, linseed, cameline seed, and the fruit of Polygonum lapathifolium. This is similar to the gruel described by Pliny as the common diet of peasants in Greece and Italy. According to evidence from Danish burials, cranberry wine mixed with myrtle and honey seems to have been the drink of the Bronze Age and a brew of barley, cranberry, and bog myrtle in the Roman Iron Age.

Grounds for Sober Optimism.—In the British Medical Association's report on general practice, there was much criticism of the lack of coordination between the different branches of the service. This criticism was justified, but the picture is not one of unrelieved gloom, and in a speech to the Executive Councils' Association the Minister drew attention to examples of cooperation between physicians and the local health authorities. In York, three general practitioners asked for midwives to be allocated to attend prenatal clinics run for their patients in their surgeries. This has been arranged by the local health authority. In Wolverhampton, a coordinated scheme of prenatal care based on a simple procedure has been agreed on between the local health authority and the local general practitioners; this should result in the best use of both the facilities provided by the local authority's prenatal clinics and the services of the practitioners. In Gloucester, a special nursing service has been provided to relieve general practitioners of night visits for certain purposes such as giving subcutaneous injections. Every night, except Sunday, a nurse starts a night round at 8 p. m. to give injections as ordered beforehand in writing by the general practitioners. In Staffordshire, a scheme is in operation under which the general practitioner can refer any chronically sick patient whom he considers cannot be treated at home under prevailing conditions to the Area Medical Officer, who then tries to arrange for home nursing. This has resulted in many patients being treated at home who would otherwise be sent to the hospital.

Influenza Vaccine Trial.—Promising results from the use of an influenza A vaccine during the winter of 1952-1953 are reported by the Medical Research Council committee on clinical trials of influenza vaccine (*Brit. M. J.* 2:1173, 1953). The trial vaccine was polyvalent with equal proportions of a threefold concentration of F.M. 1 originally recovered in 1947 in the United States and of the egg-adapted Liverpool (1951)

The items in these letters are contributed by regular correspondents in the various foreign countries.

strain. Each dose of 1 ml. contained 9,600 hemagglutinating units of F.M. 1 and 12,000 such units of the Liverpool (1951) strain adsorbed on 10 mg. of aluminum phosphate. The volunteers for the trial were industrial workers, hospital nurses, university students, and the service men. The trial vaccine was given to 6,340 volunteers and the control vaccine to 6,370. Unfortunately, from the point of view of the trial, the incidence of influenza A last winter was comparatively slight, so that the final assessment had to be made on relatively small numbers. These showed, however, that the attack rate of clinical influenza was 3% in those receiving the trial vaccine and 4.9 in those receiving the control vaccine. This gives a difference of 1.9±0.34, a figure that is statistically significant and is equivalent to a 40% reduction in influenza in the trial group compared with the control group. The difference in incidence of febrile cold, febrile sore throat, and other respiratory disease in the two groups was not significant. A comparison of the two groups in different areas of the country according to the incidence of influenza was also made. This showed that in areas of high influenza incidence the attack rate was 3.79% in the trial group and 6.61% in the control group. The incidence of local reactions to the trial vaccine was nil or slight in 97.3%, moderate in 2.6%, and severe in 0.1%. The comparable figures for the control group were 95.9%, 3.9%, and 0.2%. The incidence of general reactions to the trial vaccine was nil or slight in 98.2%, moderate in 1.2%, and severe in 0.5%. The comparable figures for the control group were 97.6%, 1.9%, and 0.5%.

Papilloma Research Scheme.—Details have just been announced of the results of a five year investigation into the incidence and causes of papilloma of the bladder among workers in the chemical industry. This investigation, which has been sponsored by 20 chemical manufacturers, was directed by a scientific committee under the chairmanship of Prof. Alexander Haddow, director of the Chester Beatty Research Institute. The results show that the risk of a tumor of the bladder developing from a "mixed exposure" to alpha-naphthylamine, beta-naphthylamine, and benzidine is about 33 times that of the population at large. Such a risk with beta-naphthylamine is 61 times that of the population at large, the corresponding proportions for alpha-naphthylamine and benzidine being 16 and 19 respectively. The risk appears to be greatest among employees of manufacturers, less among employees of users, and least among refiners. No evidence was obtained to suggest that the manufacture or use of aniline caused bladder tumors. Those employed in the manufacture of magenta and of auramine also showed a significant excess of deaths from bladder tumors. At the Chester Beatty Research Institute, two carcinogenic compounds were isolated as impurities from commercial beta-naphthylamine and a third from a rubber antioxidant derived from naphthylamine. Because of its carcinogenicity, the manufacture of beta-naphthylamine has ceased completely in Great Britain. The replacement of some of the important technical products based on beta-naphthylamine has been achieved by the use of alternative materials as starting points, and, in some instances, by the use of alpha-naphthylamine. It has not been found possible to dispense with the use of benzidine, from which some of the most important dyestuffs are made.

It was recommended that, wherever possible, the carcinogenic material should be delivered to the user-plant as a slurry or solution and that, wherever it is necessary to separate the solid in the dry or paste form for sale to other users, great care be taken to avoid dust in the packing operation. Wooden casks, which could absorb the dangerous material, should not be used or, if they must be used, they should be thoroughly washed immediately after use without steaming or heating.

Wellcome Research Library.—On Dec. 4, Lord Woolton opened the extension to the Library of the Royal Society of Medicine that was made possible by a gift of £125,000 from the Wellcome Trustees. This will allow the library, the largest medical library in Europe, to provide full facilities for the fellows of the society and to house the quarter of a million books that it now possesses. The library was founded in 1806.

PARIS

Experimental Intracardiac Surgery During Artificial Hibernation.—Investigations have recently been resumed to determine the most efficient method of performing intracardiac operations in the open on an exsanguinated heart. The point at issue was the draining of the cardiac cavities without anoxemia of the vital brain centers. Bigelow in 1951 attempted intracardiac operations on dogs with deep hypothermia, because refrigeration reduces the oxygen requirements, but most of these dogs died of shock and others died in the course of the rewarming process. Only 15% survived. On the other hand, Juvenelle, Linde, and Wegelius succeeded in keeping their dogs alive, with the aid of a peripheral heart-lung, at a temperature between 59 and 68 F and with the aorta clamped off for 20 to 30 minutes. This artificial hypothermia is attended by hemoconcentration, acidosis, and hypercoagulability, which are probably an adrenergic response, and later, when endocrine vegetative exhaustion occurs, the action of the cold assumes the form of an irreversible shock. The authors have noted that refrigeration was possible with artificial hibernation achieved by blocking both the central and the peripheral vegetative nervous system and the endocrine system. Instead of hemoconcentration, acidosis, and hypercoagulability, the reverse (hemodilution, alkalosis, and hypocoagulability) was observed. Basal metabolism is much reduced by the blocking drug. The authors thus succeeded in decreasing the temperature of a dog without using ice.

They tried to treat the fibrillations with the method of Prof. Léon Binet and Dr. Strumza, injecting 10 to 20 cc. of a 7.5% solution of potassium chloride into the right ventricle. The solution was continually injected until the heart became inert, inertia being a prerequisite for massage of the heart to restore its rhythmical contractions. Levulose, which is directly utilized by muscular fibers, has often yielded good results. With the method of Binet, the authors obtained 15 good results out of 16 attempts, but the balance achieved was precarious and, above all, the time allowed for work was limited by the duration of the circulatory arrest, which lasted from 5 to 10 minutes, too short a time for a cardiac operation. Eventually they used somatotropin, which in 12 cases stopped all fibrillations during clamping for 15 to 20 minutes. This enabled them to operate on an animal with a temperature of 82.4 F. To prevent late fibrillation that occurs a few minutes after declamping, they declamped the vena cavas separately and gradually at intervals of a few minutes. A high degree of superoxygenation is indispensable at that stage.

After some groping the following technique has been devised: The day preceding the operation, the animal is given an injection of 20 to 40 units of somatotropin. On the morning of operation a similar injection is given. Hibernation is then brought about by means of a "lytic cocktail," consisting of 0.75 gm. of Largactil (dimethylaminopropyl-N-chlorophenothiazine hydrochloride), 0.05 gm. of Phenergan (10-[2-dimethylaminoisopropyl] phenothiazine), and 0.05 gm. of meperidine (Dolosal) in 6 cc. of isotonic sodium chloride solution and administered intravenously every 15 minutes for at least 90 minutes. While hibernation is being established, the animal is given an intravenous injection of 5 to 10 units of somatotropin. Under the influence of the latter the animal, which is still agitated, falls asleep. The drop in temperature is gradual and the animal no longer presents any defense reaction. No jerks of the extremities or clonic spasms are seen. The rhythm of the heart, accelerated by "the cocktail," slows down under the action of somatotropin.

When the thorax has been opened, the authors inject procaine into the pericardial cavity. The recorded cardiac rhythm is characterized by a slowing and by a substantial increase in pulse pressure. It is not necessary to give the animals heparin because the coagulability of their blood is decreased as result of adrenergic blocking. Warming is started as soon as the thorax has been closed. Drug perfusions are discontinued, the animal is placed on a litter with its head slightly downwards, and antibiotics are given. The closing of the thorax requires special care. The lungs must not be injured because the dog has only one pleural cavity. The azygos vein must be ligated to drain the cardiac cavity.

Comparative Studies of Vascularization in Tuberculous Cavities and in Limited Caseous Foci.—On May 9, 1953, J. Delarue, C. Sors, and J. Mignot addressed the French Society of Tuberculosis on the results of their investigations carried out with the aid of arterial, bronchial, and pulmonary injections and radiography. They found an obstruction of pulmonary arteries in tuberculous cavities. At this level vascularization is taken over by the bronchial vascular system. As regards tuberculomas, anastomoses seem to be less numerous, and at some points the vascular patterns are similar to those found in the cavities. At such points the caseous material seems to be undergoing liquefaction. The authors showed that the liquefaction of caseous material is closely linked with a change in local circulation.

SWEDEN

Modern Treatment of Tuberculosis.—The combination of chemicals with antibiotics in the treatment of tuberculosis is showing much the same pattern in Sweden as in various other countries, but, with so many drugs and combinations of them and with such a wide range of dosage and time-spacing, this pattern is apt to change in detail from time to time. The inclusion of penicillin in the pattern is one of the special features of the policy adopted by the medical department of the Serafimer Hospital in Stockholm, under the charge of Prof. Anders Kristenson. His advocacy of penicillin in this connection is prompted by his suspicion that secondary infections may play an important part in pulmonary tuberculosis, particularly when it has reached the stage of cavitation. In vitro tests by Espersen have suggested that the combination of penicillin with streptomycin is beneficial by virtue of a synergistic action on the tubercle bacillus. The following scheme lasting four weeks is recommended for adults by Professor Kristenson: Every day 1 gm. of dihydrostreptomycin, 300,000 international units of penicillin, 0.3 gm. of isoniazid in three doses, and 12 gm. of *p*-aminosalicylic acid (PAS) in three or four doses. At the end of this period, the isoniazid and *p*-aminosalicylic acid are given daily as before and the same dose of streptomycin and penicillin is given only twice a week. Changes are introduced in this procedure in response to the behavior of tubercle bacilli in the sputum, including their resistance to the drug used. Changes in the radiological findings are also a guide to treatment, and the dosage of *p*-aminosalicylic acid has sometimes to be changed when it provokes complications. Professor Kristenson foresees a time when it may be possible to give a combination of the above-mentioned drugs early in the disease with the hope of sooner being able to let nature heal the lesions.

Dr. Gösta Birath of Gothenburg believes that damage to certain cranial nerves due to dihydrostreptomycin may be less severe in Sweden than elsewhere because of the avoidance of prolonged and uninterrupted treatment with this antibiotic. He is in favor of greater spacing between each injection of dihydrostreptomycin, which is now injected, as a rule, only two or three times a week. In choosing between streptomycin and dihydrostreptomycin for infections other than tuberculosis he prefers the latter because it is less likely to provoke allergic phenomena in patients and hospital staffs, whereas the risk of damage to the auditory nerve is about the same for both drugs when they are given over a comparatively short period of time.

Legal Abortion Permitted but not Practiced.—Abortions, accidental, legal, and criminal, continue to attract much attention in the Swedish press, both medical and lay. In *Svenska Läkartidningen* for Nov. 20, 1953, Dr. Per Arén of Uppsala and Dr. Curt Åmark of Stockholm have asked how the mothers who have been granted the legal induction of abortion, but, have changed their minds and have let their pregnancies go to term fare. The 32 women who followed this course were interviewed in their homes an average of three and a half years after the confinement in question. The gynecologic and psychiatric examinations they underwent indicated that the course they had taken was in most cases justified. Three of the infants had died at birth or shortly thereafter, and three others had been adopted by foster parents as soon as they were born. The remaining 26 mothers had cared for their own babies, and at least 20 were leading well-adjusted and harmonious lives. Only three women had regretted the lost opportunity to accept a legal abortion. This follow-up study suggests that legal abortion is apt to be permitted unwisely and unadvisedly even when the safeguards provided by the law have seemingly been effective. During the follow-up examination, the mothers were questioned about the indications for the induction of legal abortion and in 11 cases information on this subject was not obtained. In most of these cases conflict situations may have existed. In 25 cases social and economic difficulties had been invoked as a plea for the induction of abortion, and at least 12 women had again become pregnant. It was a curious and instructive psychological phenomenon that some of the women experienced a sense of relief on learning that the authorities had consented to abortion. Whatever the explanation, this change of mind points to the wisdom of allowing time and opportunity for the woman to reconsider her own case. In some cases abortion had been permitted on eugenic grounds on the strength of intelligence tests, the result of which may be misleading under the strains of pregnancy. In several cases the sense of depression and debility experienced by the applicants for abortion had proved to be transient; another reason why this indication for abortion should be considered most critically.

Prognosis for Sarcoidosis.—A curious outcome of mass radiographic examinations for tuberculosis has been an impressive series of cases of sarcoidosis, many of which would not have come to light but for this test. The information thus obtained may help to solve the riddle of the pathogenesis of this disease and give clues to the prognosis for it. From the medical department of the Falu Hospital comes a report by Dr. S. E. Fagerberg whose study covers the period 1944 to 1951 and deals with 58 patients observed among a total of 18,432 admitted to this hospital. After the omission of 4 patients there remained 54 (25 men and 29 women) about whose subsequent fate information was available. The ages of these patients ranged from 20 to 69 years. In addition to the 7 patients who had died, 10 were found on reexamination to be subjectively and objectively well and 9 felt well but still showed objective signs of the disease, such as changes in the lungs, eyes, or bones. The remaining patients still presented various subjective and objective manifestations of the disease. In 5 patients involvement of the lungs or eyes entailed severe invalidism, and in 32 there was impairment of health but not severe invalidism. In view of the comparatively short observation period and the prospect of progress of the disease in some of these patients, Dr. Fagerberg is dubious over the prognosis of a disease that has been given the somewhat misleading name of benign lymphogranulomatosis. With only 10 patients showing both subjective and objective recovery on reexamination, the adjective benign seems to be a misnomer.

Another report on sarcoidosis comes from Dr. Hanns G. Bauer whose material consists of 185 patients with pulmonary sarcoidosis discovered in the course of about 423,000 mass radiographic examinations in Stockholm. His report, published in *Nordisk Medicin* for Dec. 3, 1953, shows that most of these patients were between the ages of 25 and 40 years, none were under 18, and the disease was rare in old age. The experience of the past 10 years suggests that the radiological manifestations of pulmonary sarcoidosis can be classed in three main groups showing marked differences with regard to the prognosis. The prognosis seems to be worst when the radiological manifestations indicate involvement of the lung parenchyma. Most of these 185 patients were referred from the Stockholm Central Tuberculosis Dispensary to the St. Göran Hospital, where it was found that the patients were often impatient of control as the absence of subjective symptoms made it difficult for them to realize that they were ill. But for mass radiography, many of them would have remained unconscious of their sarcoidosis.

CORRESPONDENCE

VISUAL AIDS FOR TEACHING

To the Editor:—At the first World Conference on Medical Education in London, the section on teaching methods devoted considerable time to papers and discussions of visual aids. It was stressed that, although a great deal of money is spent on photography, films, and other visual aids, there is little critical evaluation of the aids in the literature or at medical meetings.

For the past several years I have used colored slides to amplify the teaching of the acute exanthems and would like to record my experience with this method in order to get some exchange of opinion or discussion into the literature.

To test the accuracy of reproduction of the first 100 slides purchased I reviewed them and discarded 60 because the condition was not recognizable without a look at the label. It should be obvious that, if an experienced teacher does not recognize the picture as reproduced, the inexperienced student can get little of permanent value from the slide. In teaching from slides instead of from the patient, certain limitations of the method must be borne in mind by the teacher. In all photography the picture conveys much more to the person who has seen the original than to one who has not. It was surprising, for instance, to have a student ask whether the rash was elevated or flat when a slide of erythema nodosum was flashed on the screen. If the rash has not been seen, it is very difficult for the student to interpret correctly factors such as shades of color. It is also difficult to determine whether a rash is fine, feels granular, blanches on pressure, or has any depth to it. If the picture is taken of the entire body, then the details are missed; if a close-up is taken of only a portion of the rash, the picture as a whole is lost. In some diseases, it is better to supplement a still picture with a short movie that not only shows the distribution over the whole body in a long shot but also portrays the more intimate details of the rash by several close-ups. It should be noted that such manifestations as Koplik's spots or an acute sore throat are much better portrayed by a short movie than by a single still picture. When the first slides were collected it was thought that one good slide of a classic picture was all that was necessary. Experience has shown, however, that many slides showing variations are far more effective teaching material.

In the order of their usefulness, slides of chickenpox, smallpox, and vaccinia lend themselves best to this method of teaching. Most of the students have seen chickenpox, a vaccination, or at least a vesicular hive, so there is some personal experience on which to elaborate the discussion. Furthermore, the pox photographs well. It is discrete, and often the elevation is shown when caught in the lateral view. With several slides on hand it is possible first to flash one on the screen and ask for a diagnosis. This may be followed with a question like "What day of the disease is represented?" Then several slides may be shown indicating variation, distribution, and severity and leading up to a comparison with a series of smallpox. Similarly several slides of a vaccination can show the development of the lesion from day to day. The immune reaction or vaccinoid can be compared with the primary take. Slides bring out questions such as differentiation of a severe take from one secondarily infected. The question may be raised "Do satellites produce scarring?" Pictures of generalized vaccinia of different types can be shown, and, finally, the picture of a case of eczema vaccinatum gives an opportunity to discuss the contagious nature of vaccinia to unvaccinated eczematous infants. Used this way the slides have been practical and helpful.

The next disease that can be fairly well demonstrated by color slides is meningococcemia. The ecchymosis and petechiae photograph readily. The lesion is in the skin and does not call for evaluation of texture or depth. Several slides portraying variations from the mild to the severe with extensive ecchymosis give the student a picture of this disease that is not easily forgotten, even if he has not had the opportunity to see a patient. Since meningococcemia is one of the few medical emergencies, it is very worth while to discuss it with the help of slides. Other petechial diseases or purpuras may be shown for comparison.

For the most part measles is less satisfactorily portrayed by slides than the other diseases. A well-taken picture may convey much to a teacher, but a student who has never seen measles may miss most of the significant findings. The rash of measles has a color and texture that are impossible to wholly catch by photography. Unfortunately the two diseases from which measles must be differentiated, rubella and exanthem subitum, photograph very poorly and make it almost impossible to contrast the three diseases by pictures. In spite of these handicaps, slides on measles can be used to some advantage, as to portray distribution, confluence, and the morbilliform nature and to contrast it with scarlet fever even though the latter does not photograph convincingly. The rash of scarlet fever has a texture and color that is not readily portrayed. It is difficult to demonstrate the blanching, and the marked variation from one area of the body to another is not readily shown by slides. On the other hand, the tongue of a patient with scarlet fever photographs very well. It is also worth while to have a good picture of desquamation since it is infrequently seen now.

It should be added that research in the use of visual aids should not be left to camera fans or reluctant teachers who need props. It should be diligently analyzed by objective critical observers and educators.

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San Francisco.

LEPROSY

To the Editor:—Dr. William Feldman's suggestion (*J. A. M. A.* **153:**1041 [Nov. 14] 1953) that Mycobacterium leprae be renamed M. hansenii, so that the disease, leprosy, may be renamed "hansenosis," has certain disadvantages to which attention should be drawn. 1. Mycobacterium leprae and leprosy or *lepra* or *la lèpre* are worldwide expressions, whereas the objectionableness of the word leper and the debatable objectionableness of the word leprosy are, as Roland Chaussinand of the Institut Pasteur in Paris has pointed out, purely Anglo-Saxon problems. 2. Leprosy, whatever its etymology, has been applied to this disease in English speaking areas for over six centuries; this is a stronger argument for its correctness than the names of many diseases can offer. 3. The word leper is admittedly objectionable, and its avoidance was urged by both the Fifth and the Sixth International Congress of Leprosy; yet both congresses recommended retention of leprosy as the name of the disease. 4. General, unemotional public acceptance of syphilis, cancer, and tuberculosis has been achieved for these three once horrifying diseases by talking and writing about them under their proper scientific names. Could this have been done as well, or at all, if they had been renamed "schaudinnosis," "virchowosis," and "kochosis"? I think it highly unlikely: their old names would have continued to inspire the same old emotional reactions once they became known. So will the name leprosy, once it is used to explain what "hansenosis" means. Dr. Feldman's suggested short cut may bypass a tedious program of public education, but it will prove in the long run to follow a circular path that winds up about where it started.

My sympathy and concern for the feelings of the victims of leprosy are genuine. I feel it would be a serious disservice to them to outlaw the name of their disease—as if it were so dreadful an affliction that its name could not even be uttered aloud. Rather let us use it freely, openly, unemotionally, objectively, and properly, until its sound evokes, like the sound of the word tuberculosis, only the picture of another potentially communicable disease that can be controlled by proper medical treatment.

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COUNCIL ON MEDICAL SERVICE

The Committee on Medical Care for Industrial Workers, a joint committee of the Councils on Medical Service and Industrial Health of the American Medical Association, has been conducting a study of health centers established and operated by labor unions. The data on 12 such centers are contained in a recently published report, available to those interested in the subject. The following is a brief summary of the material contained in this study.

UNION HEALTH CENTERS

Union health centers are a comparatively recent development in the United States. Several industries have had medical service plans for their employees for almost a century, but the earliest union center on record is that of the International Ladies Garment Workers Union in New York City, organized in 1913. This plan, however, was the only union venture in the health field for some 25 years. Current union interest in health benefits arose in 1942, when the federal government's wartime anti-inflation measures practically halted wage increases. The War Labor Board ruled that a welfare plan agreed upon by employer and union would not be considered a wage increase if the cost did not exceed 5% of the payroll. Since employers were allowed to deduct their share of the cost of such plans as a legitimate business expense, health and welfare plans became of prime importance in labor-management negotiations. When wage controls were discontinued, the interest in health plans remained. At latest count, these "fringe benefits" have become part of the employment contract of some 16 million workers, most of whom are covered through recognized insurance procedures. The main exceptions to this rule are the program of the United Mine Workers of America, which pays physicians and hospitals directly for services rendered UMWA members and their families, and the various "union health centers," which provide primarily diagnostic services to union members and their families.

The Committee report describes 12 of these centers, with details concerning organization and operation. They vary in size and location and include both C.I.O. and A.F.L. affiliate sponsored plans. The data have been classified under the following headings: (1) history, (2) membership, (3) objectives, (4) facilities, (5) financing, (6) budget and operating costs, (7) administration, (8) business and professional personnel, (9) benefits, and (10) preventive aspects of the services. So far as possible, the same headings are used in this summary. The Committee has not evaluated any of the plans. However, the present factual study lays a foundation for such evaluation in the future.

TABLE 1.—*Centers Studied*

Plan	Begun	Location	Union
AFL Medical Service Plan	1951	Philadelphia	AFL
ILGWU Union Health Centers	1913	New York	AFL
	1944	Philadelphia	
	1952	Cleveland	
	1950	Minneapolis	
	1950	Kansas City, Mo.	
	1947	St. Louis	
Labor Health Institute	1945	St. Louis	AFL
Hotel Trades Health Center*	1950	New York	AFL
Sidney Hillman Health Centers	1951	New York	CIO
	1951	Philadelphia	
UAW (United Auto Workers) Health Institute	1942	Detroit	CIO

* Full title: Hotel Trades Council and Hotel Association Health Center, Inc. Abbreviated title will be used in all tables.

The ILGWU has a number of centers throughout the country not included in this survey. It is believed, however, that the six studied thus far are representative of the types operated by this union.

HISTORY

The Union Health Center of the International Ladies Garment Workers Union, founded in New York in 1913, was not only the earliest of these centers but also, for many years, the only one. The next development was the UAW Health Institute, begun in 1942, almost 30 years later. By 1950, three more were in operation. Half of the total number studied were not begun until 1950, 1951, and 1952. The stimulus of the government wage "freeze" is obvious, since only two began before controls went into effect. The first ILGWU Union Health Center began in a different way from its successors. Founded before the first World War, at a time when wage increases were more important than "fringe" or "security" benefits, it was financed entirely by members' contributions. The first center consisted of two small rooms, served by one physician with limited equipment, and was designed primarily as a measure against tuberculosis, then almost an occupational disease in the garment industry. Through the years, the center grew in size and in services provided; collective bargaining brought employer contributions to help in financing. When wage controls began, the advantages of this health center to union members had been thoroughly demonstrated; it became, in a sense, a model not only for ILGWU locals in other cities but also for other unions seeking benefits to replace prohibited wage increases.

MEMBERSHIP

With the exception of the Labor Health Institute, center membership automatically includes all those eligible for care. Union membership means health center membership. The Labor Health Institute estimates that a little less than half those eligible are enrolled, since the number eligible includes dependents who are not yet covered by collective bargaining agreements. The number of union locals and members eligible for each center is shown in the following table:

TABLE 2.—*Eligible Membership*

Plan	Locals	Members
AFL Medical Service Plan	14	14,000
ILGWU Union Health Centers		
New York	32	202,000
Philadelphia	5	19,000
Cleveland	17	5,000
Minneapolis	5	800
Kansas City	8	3,000
St. Louis	13	4,500
Labor Health Institute	1	15,000
Hotel Trades Health Center	10	33,668
Sidney Hillman Health Centers		
New York	26	33,356
Philadelphia	16	23,000
UAW Health Institute	170	350,000
Totals	317	703,324

The number of members actually treated at a center during a year generally ranges between a third and a quarter of those who are eligible. The main exceptions are the ILGWU center in Minneapolis, which in 1952 served about 350 of its 800 members, and the UAW Health Institute, which in 1951 served only 16,000 of the 350,000 eligible.

OBJECTIVES

Most centers were developed primarily to provide a complete diagnostic ambulatory clinic. They have also emphasized, with not too great success, preventive medicine to promote workers' health and to avoid loss of income due to illness. One plan (the Hotel Trades Council and Hotel Association Health Center, Inc.) includes hospital service; in that center physicians will treat hospitalized members at reduced rates. The Labor Health Institute provides hospital care by staff physicians and, in addition, some home care. Few centers have definite plans for adding to their services, although several of the administrators believe that, in the future, some provision will have to be made for coverage of such uninsured medical expenses as home care, drugs, and nursing services. At present, however, most centers are concentrating on original objectives, working to increase efficiency and utilization by the members.

FACILITIES

Some idea of the facilities available at the various centers may be obtained from the following tabulation of facilities and costs:

TABLE 3.—*Health Center Facilities*

Plan	Facilities
AFL Medical Service Plan	Section of 1st floor in hospital
ILGWU Union Health Centers	
New York	6 floors, 100,000 sq. ft.
Philadelphia	2 floors, 14,000 sq. ft.
Cleveland	2nd floor of mansion
Minneapolis	2nd floor office, 7 rooms
Kansas City	3 story house
St. Louis	3 story house
Labor Health Institute	3 floors in office building
Hotel Trades Health Center	5 story office building
Sidney Hillman Health Centers	
New York	6 story building, 36,000 sq. ft.
Philadelphia	2 story building, 45,000 sq. ft.
UAW Health Institute	2 floors of 3 story building

TABLE 4.—*Health Center Costs*

Plan	Cost (in Thousands)			
	Construction/ Purchase	Rent (Ann.)	Remodeling	Equipment
AFL Medical Service Plan	$......	$4.0	$ 62.0	$ 66.0
ILGWU Union Health Centers				
New York	2,500.0*	...	892.0	.....
Philadelphia	250.0	...	.....	85.0
Cleveland	......	4.8	82.5	51.0
Minneapolis	......	1.8	10.0	13.0
Kansas City	35.0	...	32.0	32.6
St. Louis	35.0	...	34.8	35.8
Labor Health Institute	135.1	...	138.0	85.8
Hotel Trades Health Center	*96.5*†	...	*551.8*†	*126.6*†
Sidney Hillman Health Centers				
New York	110.0	...	500.0	120.0
Philadelphia	1,086.0	...	.....	183.6
UAW Health Institute	50.0	...	82.0	46.5

* Cost to union of entire 27-story building; center uses 6 floors.

† Cost analysis, Hotel Trades Health Center: "Land, $96,470; building and fixed equipment, $551,767; movable equipment, $126,630."

Neither the size of the center nor the amount of money spent will give an accurate indication of its worth. They do indicate, however, that an earnest attempt is being made to provide the modern and complete facilities necessary for good clinical services. In general, the centers are well equipped and housed in space adequate to the size of the groups served.

FINANCING

As previously mentioned, the New York ILGWU center was at first financed entirely by union funds; however, later collective bargaining agreements brought employer contributions. At present, the UAW Health Institute is the only plan studied that received no financial aid from management. The remaining plans were begun through collective bargaining agreements and, in most of them, the employer pays the entire cost. The payment, varying from 1% to 5% of the gross payroll, is usually made to the union local, which then pays the center a flat rate per eligible member. In some cases, the Sidney Hillman Health Centers for example, employer and employee share the operating costs. In another case, union funds built the center, and employers finance its operation. The UAW Health Institute is financed by flat rate per member levied on each participating local union. The rate decreases for locals more distant from the institute. Since many of the health funds began during the "wage freeze," some unions feel the employer contribution is in lieu of a wage increase and that, indirectly, the center is entirely union-financed.

BUDGET AND OPERATING COSTS

The UAW Health Institute has no year-to-year limitation on expenditures; the international union Health and Welfare Fund provides the amount necessary to operate the institute. The other centers operate on a budget basis. Most plans either have a reserve fund or are planning one as soon as initial indebtedness is met. Total operating expenses and, where available, the amount used to meet salaries or fees of physicians and auxiliary personnel are tabulated below:

TABLE 5.—*Operating Expenses*

Plan	Operating Expenses	Fiscal Year	Physicians' Payments
AFL Medical Service Plan	$ 81,700	1951	$ 39,000
ILGWU Union Health Centers			
New York	1,484,051	1952	491,954
Philadelphia	168,000	1951	119,000*
Cleveland	36,392	1952	......
Minneapolis	14,000	1952	......
Kansas City	62,706	1952	......
St. Louis	111,422	1952	......
Labor Health Institute	865,142	1952	......
Hotel Trades Health Center	586,549	1952	260,600
Sidney Hillman Health Centers			
New York	327,000	1952	116,000
Philadelphia	375,502	1952	172,731†
UAW Health Institute	367,174	1951	......

* Physicians and auxiliary personnel.

† Listed as "about 46% of operating expenses."

ADMINISTRATION

Of the 12 centers, 4 have only union representatives on the board of directors. The AFL Medical Service Plan has two board members from each local and three officers from the central labor union; the UAW Health Institute board of trustees is composed of five members of the UAW's executive committee, including the president. The New York ILGWU center's board is also composed of union officials, while the Philadelphia center has a director from each of the five affiliated unions. The eight remaining centers have both union and management directors. The Sidney Hillman Health Center in New York has a 21-man board, elected jointly by unions and managements. The center in Philadelphia has 12 representatives each from unions and employers. The Hotel Trades center is directed by 10 representatives each from the Hotel Trades Council and the Hotel Association. The Labor Health Institute is unique among the 12 plans in that, in addition to 3 management and 20 union board members, it also has 2 public representatives. The 25-member board elects a 6-member executive committee to operate the institute. Each center has a full or part-time medical director for medical administration. Larger centers have medical advisory boards, composed of the chiefs of services or of staff members. The board of directors is generally responsible for over-all policy divisions and usually for appointment of the medical staff, although the choice may be made from a list submitted by the medical advisory board.

BUSINESS AND PROFESSIONAL PERSONNEL

Administrative personnel vary greatly in number, from 3 in one center to 144 in another; in most centers, 1 office worker is employed for approximately 1,200 members. Some of these employees work only part time, and, in some centers, they act as clinical assistants or maintain health records not directly related to functions of the center itself. Most of the physicians serve the centers on a part-time basis. Some hold sessions at irregular intervals, some are at the center two to four hours daily, some are available on a consultation basis. Aside from medical directors, the only fair-sized staff of full-time physicians is at the New York ILGWU center, which has 10. Few of the other centers have more than one. Most centers employ only specialists. The four with general practitioners are the New York ILGWU center, the Hotel Trades center, the New York Sidney Hillman center and the UAW Health Institute. Payment to physicians is usually a flat rate per hour, ranging from $4.00 to $12.00. Several centers have a graduated increase in fees, depending on the length of service at the center. One has a different rate for general practitioners and specialists, and one has a highly complicated schedule that bases the specialist's rate per hour on the median annual income of specialists in his field. Two centers pay on a fee-for-service basis, while at the New York ILGWU center, full and part-time physicians are on an annual salary and the consultants on a per-hour basis. The following table shows the total personnel of each center, full and part time (including consultants), and the method of physician payment.

TABLE 6.—*Personnel*

	Personnel				
Plan	Administrative	Physicians	Nurses	Auxiliary	Physician Payment
AFL Medical Service Plan...	10	54	5	3	$7 per hr.
ILGWU Union Health Centers					
New York..................	144	175	15	74	Sal. & per hr.
Philadelphia..............	15	23	4	4	$7 per hr.
Cleveland.................	3	34	1	11	$10 per hr.
Minneapolis...............	4	1	0	1	Fee basis
Kansas City...............	3	21	1	2	$10 per hr.
St. Louis.................	6	17	1	2	$6-12 per hr.
Labor Health Institute......	20	58	16	12	Specialty rate
Hotel Trades Health Center	49	183	12	12	Fee basis
Sidney Hillman Health Centers					
New York..................	23	81	4	8	$5-7½ per hr.
Philadelphia..............	28	44	5	12	$7 per hr.
UAW Health Institute.......	16	34	1	9	$4-6 per hr.

BENEFITS AND PREVENTIVE ASPECTS OF SERVICE

In general, all centers provide the same type of service; their primary objective is complete ambulatory diagnostic care. Completeness, of course, varies with the size of the center and the amount of its funds. A few centers, the larger ones particularly, provide therapeutic care, with some emphasis on physical therapy. Several centers operate their own pharmacies and provide prescriptions at cost or at a reduced rate. As previously mentioned, two centers have arrangements for hospital care by staff physicians, and one provides some home care. Physicians at the New York Sidney Hillman Center have agreed to accept the fee schedule of the union's commercial surgical insurance in full payment for hospital care of members, thus providing an informal service benefit plan. Several centers provide special services beyond ordinary diagnostic care. The UAW Health Institute, for example, provides optometric service and a reduced rate on glasses for members. It also operates a mental hygiene service for the entire community with partial support from the community chest. All centers cooperate with members' private physicians, sending them reports on tests or examinations conducted at the center. Several centers have invited local physicians to use their diagnostic facilities. All centers are interested in preventive care, the method varying with the resources of the center. Some sponsor health education talks in plants or at the center; some distribute posters and bulletins on health topics. All emphasize the importance of regular check-ups, and one center is experimenting with multiple screening, with a mobile unit planned for visiting the various plants.

COMMENT

Despite minor variations, the union health centers studied represent definite union experimentation in the medical care field. As yet, most medical coverage is on an insurance basis, but unions are using "the high cost of medical care" and the exclusion of diagnostic services from most insurance policies as an argument for union-sponsored health centers. Thus far, the centers have concentrated on diagnosis, but expansion may well include treatment in the home and possibly in the hospital as well as at the center. In general, the centers seem modern and well equipped. A major problem for most of them is insufficient utilization by members, partly because of difficulty in visiting the center during working hours. To provide increased utilization some plans permit, or are planning to permit, the members' dependents to use the facilities. No evaluation of plans or comparison between centers has been made. However, the continued union interest in such plans, even after the removal of wartime wage controls, indicates the need for further study to determine standards by which they may be evaluated.

BUSINESS PRACTICE

The following material is based on a public relations manual issued by the Public Relations Department of the American Medical Association.—ED.

GETTING CREDIT INFORMATION

Collection begins with the first contact with the patient. Each experience a patient has in the doctor's office lays the groundwork for future payment. Because good records are essential to follow-up collections, it is important to get full information from patients on their first visit if possible. It is neither unprofessional nor greatly time consuming to obtain credit information from patients. In about 60 seconds a physician or his secretary can ask a few questions that make possible a shrewd appraisal of a patient's ability to pay. The information that should be obtained includes:

1. The patient's full name, correctly spelled. J. A. Brown is not sufficient; John Allen is more helpful. If full names are not taken, it may be impossible to locate the J. A. Brown treated in later collection follow-ups.

2. The name of the person to be billed as well as the relationship to the patient, i. e., wife treated, husband billed.

3. Marital status and number of dependents. When couples are divorced or separated, credit and collections become complicated. Inquire of a woman, for example, whether the bill should be sent to her husband at such and such an address.

4. Current address and past addresses for at least the past two years. From this information the person's stability can be determined, i. e., many residences in a short period of time may indicate financial instability. The type of neighborhood may also indicate a patient's financial status.

5. Occupation of responsible person. If a man says he works at Gordon's department store, find out whether he is a shipping clerk, a salesman, or a vice-president.

6. Who referred the patient. It is wise when referring a patient to another doctor to send along credit information or data about the patient's ability to pay.

7. The patient's charge accounts. These give good credit information. Do not ask about banks and bank accounts, as this sounds too mercenary or gives too great an impression of prying into personal affairs.

8. If a large fee is involved, a tactful inquiry about the patient's approximate annual income and financial responsibilities may be made in order to set an equitable fee.

References should not be asked for. Persons rarely list references who will be inclined to give a truthful answer anyway. Superficial signs of prosperity are often misleading. A patient who appears to be very wealthy may owe bills all over town. If a patient's ability to pay is questionable and a large fee is involved, a local credit agency can be consulted. There are over 1,200 associated credit bureaus in America offering a great deal of credit information. If the local medical society maintains a bureau of medical economics, it often can help determine a patient's credit rating. It is easier for a doctor in a small town to gage informally his patient's ability to pay. In a large city the task is more difficult and must be pursued in a more formal way, but an approximate determination of a person's ability to pay is necessary in order to provide medical care for all.

MEDICAL LITERATURE ABSTRACTS

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A.M.A. Arch. Ind. Hyg. & Occupat. Med., Chicago

8:391-492 (Nov.) 1953

Fear, Frustration, and Futility: Industrial Aspect. R. T. Johnstone. —p. 391.
Toxicity of Malathon: Summary of Mammalian Investigations. L. W. Hazleton and E. G. Holland.—p. 399.
Studies in Vanadium Toxicology: Reduction in Cystine Content of Rat Hair. J. T. Mountain, L. L. Delker and H. E. Stokinger.—p. 406.
Absolute Method of Sampling and Measurement of Solid Air-Borne Particulates: Combined Use of Molecular Filter Membrane and Electron Microscopy. D. A. Fraser.—p. 412.
Silicosis in Mica Mining in Bihar, India. H. Heimann, S. Moskowitz, C. R. H. Iyer and others.—p. 420.
Some Physiological Effects of Disulfur Decafluoride (S_2F_{10}) After Intravenous Injection in Dogs: Note on Its Toxicity to Rabbits. J. P. Saunders, M. Shoshkes, M. R. De Carlo and E. C. Brown.—p. 436.
Dust Sampler which Simulates Upper and Lower Lung Deposition. W. B. Harris and M. Eisenbud.—p. 446.
Pneumoconiosis in Tungsten-Carbide Tool Industry: Report of Three Cases. C. W. Miller, M. W. Davis, A. Goldman and J. P. Wyatt. —p. 453.
Studies of Acute and Chronic Toxicity of Germanium. G. Rosenfeld and E. J. Wallace.—p. 466.
Absence of Toxic Manifestations in Workers Exposed to Chlordane. W. C. Alvarez and S. Hyman.—p. 480.

A.M.A. Arch. Neurology and Psychiatry, Chicago

70:551-686 (Nov.) 1953

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Factors that Influence Prognosis in Acute Focal Cerebrovascular Lesions. C. H. Millikan and F. P. Moersch.—p. 558.
*Failure of Abnormal Cerebrospinal Fluid Pressure to Influence Cerebral Function. H. W. Ryder, A. Rosenauer, E. J. Penka, F .F. Espey and J. P. Evans.—p. 563.
Some Relationships of Intelligence, Mental Efficiency, Mental Deterioration, and Disease. M. P. Manson.—p. 587.
Pituitary-Adrenal Cortex Reactivity in Schizophrenic Patients. W. F. Fry Jr.—p. 598.
Central Inhibition in Cortical Conditioned Reflexes. F. Morrell and M. H. Ross.—p. 611.
Statistical Control Studies in Neurology: IV. Discomfort with Conjugate Gaze in Head Injuries. N. Savitsky and M. J. Madonick. —p. 617.
Ciliospinal Reflex in Injuries of Cervical Spinal Cord in Man. A. J. Arieff and S. W. Pyzik.—p. 621.
Hallucinations in Braille: Effects of Amygdaloidectomy. W. Freeman and J. M. Williams.—p. 630.
Effect of Carbon Tetrachloride on Nervous System. H. Stevens and F. M. Forster.—p. 635.
Factors Influencing Extensor Tonus and Respiration in Decerebrate Cats. W. D. Hagamen and R. L. Beals.—p. 650.

Cerebrospinal Fluid Pressure.—Several hundred patients with and without abnormal cerebrospinal fluid pressures and disorders of the central nervous system were submitted to lumbar puncture with addition to and subtraction from the fluid in order to study the relation between the fluid pressure and changes in craniospinal blood volume. Of these patients, 157 also had lumbar barographies in which fluid was withdrawn from the lumbar subarachnoid space, reinjected, and then enough withdrawn to return the pressure to the original level; at the same time, the internal jugular venous pressure, the internal carotid or brachial artery pressure, and usually the respirations were recorded. Diverse reactions to this procedure included various types of headache on both addition and subtraction of fluid, painful restlessness on addition of fluid, and a "Cushing reaction" (rise in blood pressure and in jugular pressure and acceleration and deepening of respiration) in the few patients in whom the pressure was raised to the level of the mean arterial blood pressure. Induction of these reactions associated with extreme deviations in fluid pressure could in no case be shown to be directly due to the induced change in pressure. The mechanisms of the reactions are discussed. It is noteworthy that lumbar barography does not produce the nausea and vomiting associated with ventriculography and encephalography. The authors conclude that, since the cerebrospinal fluid pressure has no direct effect on cerebral function, there are no absolute pressure receptors in the brain. The factor that does modify cerebral function is believed to be the stretching or distortion of craniospinal structures that stimulate afferent nerve fibers and thus produce the symptoms associated with changes in fluid pressure.

Alabama State Medical Assn. Journal, Montgomery

23:91-118 (Oct.) 1953

Toxemia of Pregnancy. J. C. Carmichael.—p. 91.
Rectal Carcinoids. E. G. Bovill and E. H. Roberts.—p. 93.
Diagnosis and Management of Irritable Colon. A. W. Alford.—p. 99.
Some Indications for Sympathetic Block. F. Nicholson.—p. 105.

American Journal of Obstetrics & Gynecology, St. Louis

66:929-1160 (Nov.) 1953

Optional Nursery Facilities for Care of Mothers and Newborn Infants. J. Parks, P. A. McLendon and M. Kelley.—p. 938.
What are the Earliest Endometrial Changes to Justify Diagnosis of Endometrial Cancer? R. W. Te Linde, H. W. Jones and G. A. Galvin. —p. 953.
*Pregnancy Associated with Disease of Adrenal Glands. A. B. Hunt and W. M. McConahey.—p. 970.
Vascular Bed of Bulbar Conjunctiva in Normal Menstrual Cycle. R. Landesman, R. G. Douglas, G. Dreishpoon and E. Holze.—p. 988.
Relationship of Hormonal Environment to Genesis and Inhibition of Neoplastic Growth: Is Cancer Autonomous? R. W. Rawson.—p. 999.
*Cerebral Circulation and Metabolism in Toxemia of Pregnancy: Observations on Effects of Veratrum Viride and Apresoline (1-Hydrazinophthalazine). M. L. McCall.—p. 1015.
Is Tracheotomy Indicated in Eclampsia? C. G. Collins, F. G. Nix and I. Dyer.—p. 1031.
Mechanisms of Bleeding During Pregnancy. R. A. Bartholomew, E. D. Colvin, W. H. Grimes, J. S. Fish and W. M. Lester.—p. 1042.
Does Administration of Diethylstilbestrol During Pregnancy Have Therapeutic Value? W. J. Dieckmann, M. E. Davis, L. M. Rynkiewicz and R. E. Pottinger.—p. 1062.
Further Studies on Experimental Endometriosis. R. B. Scott, R. W. Te Linde and L. R. Wharton.—p. 1082.
Observations on Pathogenesis of Premature Separation of Normally Implanted Placenta. W. F. Mengert, J. H. Goodson, R. G. Campbell and D. M. Haynes.—p. 1104.
Review of 1,000 Maternal Deaths in a Rural State. R. A. Ross.—p. 1113.
Nonoperative Treatment of Stress Incontinence in Women. L. R. Wharton. —p. 1121.
Modern Treatment of Tuberculosis and the Gynecologist. E. M. Jameson. —p. 1131.
Influence of Antibiotic Therapy on Intrauterine Bacterial Flora. H. C. Hesseltine, J. Bustamante and M. Loth.—p. 1140.

Pregnancy and Diseases of Adrenal Glands.—This report is based on 18 pregnancies in 11 patients with disturbances of adrenal function seen at the Mayo Clinic during the period 1940-1952 and other such pregnancies reported in the literature. Distribution of pregnancies in the cases reported was as follows: seven in four patients with active Cushing's syndrome; two in five patients with adrenal cortical insufficiency associated with Addison's disease in three women, following surgery for Cushing's syndrome in one and following removal of bilateral pheochromocytomas in one; and four in four patients who had been treated for Cushing's syndrome and in whom no clinical adrenal cortical insufficiency was present. Hypertension is probably the chief danger to those patients with hyperfunction of the adrenal cortex or medulla. Fetal loss occurred in three of

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Titles marked with an asterisk (*) are abstracted.

the seven pregnancies associated with active Cushing's syndrome. Among the nine women with pheochromocytomas (two reported here and seven in the literature), the fetal loss was five. The hypertension of pheochromocytoma may be of serious maternal consequence, especially if the lesion is undiagnosed at deliverery; two of six patients reported in the literature died of shock postpartum. Three adrenal states may bring about "obstetric shock" with serious postpartum collapse and death: (1) postpartum crisis in women with adrenal cortical insufficiency; (2) postpartum collapse in parturients due to a pheochromocytoma; and (3) acute adrenal insufficiency after delivery in patients with adrenal cortical atrophy induced by previous cortisone therapy. This condition has not been seen post partum, but should be borne in mind as a possibility for every woman who has had cortisone therapy. Significant elevation during pregnancy of the values for urinary 17-ketosteroids and corticosteroids was found in two patients with adrenal cortical insufficiency; the source of this increase is unknown.

Toxemia of Pregnancy.—The nitrous oxide method for the quantitative determination of the cerebral blood flow has been used during the past six years to make approximately 600 cerebral blood flow investigations of 325 pregnant women. Values for mean arterial blood pressure, cerebral blood flow, cerebral oxygen metabolism, cerebral vascular resistance, respiratory quotient, amounts of oxygen and carbon dioxide in the veins and arteries, and arteriovenous oxygen difference were determined in normal pregnant and normal nonpregnant women. The arterial and venous concentrations of oxygen and carbon dioxide are much lower in pregnant women, apparently due to so-called hydremia of pregnancy with relative increase in plasma volume and lowered hemoglobin concentration; but normal pregnancy causes no alteration in the normal pattern of oxygen utilization by the brain. The values were established for preeclampsia, essential hypertension with superimposed acute toxemia, and eclampsia. The over-all cerebral blood flow is not affected by these three types of toxemia of pregnancy. Cerebral oxygen metabolism is normal in nonconvulsive toxemia but depressed during the coma of eclampsia, even though the arterial oxygen supply to the brain is normal, suggesting a histotoxic anoxia. The cerebral vascular resistance is increased in both convulsive and nonconvulsive toxemia; this is consistent with the conception of toxemia of pregnancy as generalized vasospasm. Two vasodilating drugs, veratrum viride and hydralazine (Apresoline) hydrochloride, have been evaluated in the treatment of toxemia of pregnancy. The former was administered to 20 women; 9 were normal prenatal patients and 11 had toxemia of pregnancy. There were no complications occasioned by administration of the drug, and the fetal heart tones were not adversely affected. After administration of veratrum viride there was a drop in the mean arterial blood pressure and the cerebral vascular resistance of all the women to subnormal levels. The other cerebral values were not significantly affected. Hydralazine was given to 13 toxemic patients and 9 normal pregnant women. There were some transient, but no permanent, ill-effects, and the fetal heart sounds remained normal. The drops in mean arterial blood pressure and cerebral vascular resistance were not so large as those following administration of veratrum viride. Cerebral blood flow and cerebral oxygen metabolism were increased by about the same amount in both the normal and the toxemic patients. It is suggested that cerebral vascular resistance is a more important factor in toxemia of pregnancy than systemic blood pressure and that blood viscosity, brain edema, and spinal fluid pressure play less important parts in the cerebral vascular resistance of toxemia of pregnancy than does augmented tone of the cerebral vessels. The cause of this increase is not known, but it must depend on neurogenic, chemical, or humoral influences. Since the two vasodilators studied do not affect either of the first two modes of influence, the last assumes the greatest importance. It has been recently discovered that the cerebrum secretes a vasopressor substance and that the brain possesses a chemoreceptor system that has an important place in determining the body's response to vasoactive substances; therefore, the possibility must be strongly considered that some humoral agent is the cause of the vasospasm of toxemia of pregnancy and is involved in the action of the hypotensive agents studied.

American Journal of Physiology, Washington

174:331-498 (Sept.) 1953. Partial Index

Effect of X-Irradiation upon Performance of Daily Exhaustive Exercise by Rat. D. J. Kimeldorf, D. C. Jones and T. J. Castanera.—p. 331.
Choline Studies in Rats Following Whole-Body X-Irradiation. D. J. Buchanan, W. J. Darby, E. B. Bridgforth and others.—p. 336.
Effect of Hemorrhage on Estimated Hepatic Blood Flow and Renal Blood Flow in Dogs. H. O. Heinemann, C. M. Smythe and P. A. Marks.—p. 352.
Liver and Muscle Glycogen as Influenced by Alloxan. O. S. Cullimore, P. J. Bradshaw, N. R. Blatherwick and E. F. Beach.—p. 357.
Electromyography in Normal, Dilated, Transected and Transplanted Ureter. R. Baker and J. Huffer.—p. 381.
Development of Experimental Renal Hypertension in Dog Following Reduction of Renal Artery Pulse Pressure Without Reducing Mean Pressure. E. W. Hawthorne, S. L. C. Perry and W. G. Pogue.—p. 393.
Renal Function During Arterial Hypertension Produced by Chronic Splanchnic Nerve Stimulation in Dog. W. G. Kubicek, F. J. Kottke, D. J. Laker and M. B. Visscher.—p. 397.
Chemical Changes in Rabbit Brain During Anoxia. H. G. Albaum, W. K. Noell and H. I. Chinn.—p. 408.
Hemodynamic Effects of Continuous Intravenous Infusion of Neo-Synephrine. D. W. Knapp, B. K. Hutt and S. M. Horvath.—p. 413.
Relationship Between Actions of Adrenocortical Steroids and Adrenomedullary Hormones in Production of Eosinopenia. W. L. Henry Jr., L. Oliner and E. R. Ramey.—p. 455.
Metabolism of Plasma Expanders Studied with Carbon-14-Labeled Dextran. I. Gray—p. 462.

175:1-170 (Oct.) 1953. Partial Index

Effects of l-Epinephrine and l-Nor-Epinephrine on Cardiac Excitability. A. A. Siebens, B. F. Hoffman, Y. Enson and others.—p. 1.
Effect of Hypothalamic Lesions on Adrenal Cortical Response to Stress in Rat. S. M. McCann.—p. 13.
Effect of X-Irradiation on Serum Potassium and Sodium Levels in Rabbits. R. D. Goodman and M. Vogel.—p. 29.
Renal Tubular Resistance to Mercurial Action in Sodium Deficiency. L. Rice, J. Frieden, B. M. Kaplan and M. Smith.—p. 45.
Peripheral Vascular Responses to Remote Thermal Burns and Frostbite as Influenced by Heparin and Paritol. B. J. Sullivan and W. K. Masterson.—p. 56.
Stress and Capillary Resistance (Capillary Fragility). J. Kramár.—p. 69.
Physiological Properties of Renin and Hypertension. H. Goldblatt, H. Lamfrom and E. Haas.—p. 75.
Bio-Electric Phenomena as Etiologic Factor in Intravascular Thrombosis. P. N. Sawyer and J. W. Pate.—p. 103.
*Salt-Fed Animals as Test Object for Pressor Substances in Blood of Hypertensive Animals. D. B. Gordon, D. R. Drury and S. Schapiro. —p. 123.
*Terminal Phenomena Associated with Massive Doses of X-Rays. H. L. Andrews and K. C. Brace.—p. 138.
Effects of Irradiation on Anabolism of Antibody and of Serum Albumin and Globulin. K. M. Stevens, I. Gray and M. S. Schwartz.—p. 141.
Effect of Whole Body X-Irradiation on Blood Constituents. W. E. Cornatzer, O. Engelstad and J. P. Davison.—p. 153.
Synergistic Effect of Internal Irradiation and Phlebotomy on Production of Cirrhosis and Ascites in Dogs. P. F. Hahn, E. L. Carothers and H. Brummit.—p. 162.

Pressor Substances in Blood.—The theory that various forms of hypertension may be due to the presence of a pressor substance in the blood is an appealing one, and many attempts have been made to verify it experimentally. The possibility was considered that renal hypertension may involve, in addition to the presence of a pressor substance in the blood, a sensitization of the animal to the pressor action of this substance. This idea seemed reasonable in view of numerous experimental results showing a heightened sensitivity of the renal hypertensive animal to various pressor agents. In view of evidence of an increased amount of sodium in various tissues of the renal hypertensive animal, it was further considered possible that the increased sensitivity of the hypertensive animal might be dependent on this change in its cellular composition. Cross transfusions were carried out between renal hypertensive rabbits and rabbits that had previously been drinking 2% sodium chloride solution for three or more weeks. There was an elevation of the arterial blood pressure of the animals fed salt in every instance after completion of cross transfusion and recovery of the animals from anesthesia. Two series of control experiments were carried out. In one, cross transfusions between renal hypertensive rabbits and normal rabbits were performed. There were no significant elevations of the normal rabbits' blood pressure after this procedure. In the other series, cross transfusions between normal rabbits and salt-fed rabbits were performed. In these experiments, no rise or a very small rise in the blood pressure of the salt-fed rabbits was observed. These results indicate that there is a pressor substance in the blood of renal hypertensive rabbits. Normal rabbits do not react to this substance. Rabbits "densitized" by drinking a hypertonic solution react to this substance by an elevation of blood pressure. It is suggested that the hypertensive animal responds to the same substance because of an increased reactivity of its vascular system.

Terminal Phenomena Associated with Massive Irradiation.—Most studies on the biological effects of high energy radiation have been made with doses causing death in a matter of days. During this interval secondary effects and bacterial invasion may develop and obscure the primary radiation effects. The present studies were undertaken with the thought that a single dose of x-rays from 50 to 100 times that ordinarily used would emphasize the primary radiation effects and elicit previously overlooked phenomena. A series of 22 guinea pigs were exposed to 25,000 r of x-rays over the whole body or with various areas shielded. Measurements of rectal temperature, electrocardiograms, and single lead electroencephalograms were taken at intervals until the animals died or were killed for blood chemistry studies. All animals showed a striking drop in the heart rate and body temperature, and slow waves appeared in the electroencephalogram. Clinical signs of central nervous system dysfunction appeared after a few thousand roentgens had been delivered, and these persisted until death. The dysfunction appears to be subcortical and is not the direct result of ionization in the brain tissue.

Journal of Bacteriology, Baltimore

66:377-504 (Oct.) 1953. Partial Index

Explanation for Arithmetic Linear Growth of Mycobacteria. W. A. Volk and Q. N. Myrvik.—p. 386.

Relationship Between "Chloramphenicol Reductase Activity" and Chloramphenicol Resistance in Escherichia Coli. J. R. Merkel and E. Steers. —p. 389.

Auto-Adaptation: New Phenomenon Observed in Bacterial Population. B. E. Wright.—p. 407.

Effects of Some Salts on Germicidal Action of High Voltage Cathode Rays Towards Micrococcus Pyogenes Var. Aureus. C. G. Dunn. —p. 421.

Requirement of Electrolytes for Adsorption of Escherichia Coli Antigen by Red Blood Cells. E. Neter and N. J. Zalewski.—p. 424.

Production of Acid Phosphatase by Certain Species of Actinomyces. A. Howell Jr. and R. J. Fitzgerald.—p. 437.

Significance of Lactose Fermentation and Its Relationship to Resistance in Klebsiella Pneumoniae. V. J. Cabelli and M. J. Pickett.—p. 443.

Blood Media for Cultivation of Mycobacterium Tuberculosis: VII. Comparison of Blood Agar-Penicillin and Lowenstein-Jensen Media Under Routine Diagnostic Conditions. M. S. Tarshis, P. C. Kinsella and M. V. Parker.—p. 448.

Journal of Thoracic Surgery, St. Louis

26:441-550 (Nov.) 1953

Present Chaos Regarding Resection of Residual Caseous Lesions in Pulmonary Tuberculosis. E. J. O'Brien, A. C. Miller, L. Linda, P. T. Chapman, K. Koster and P. V. O'Rourke.—p. 441.

*Use of Isoniazid as Prophylactic Antibacterial Agent in Pulmonary Resection for Tuberculosis. M. E. Childress, M. E. Thoren and A. C. Daniels.—p. 447.

Influence of Long-Term Chemotherapy on Surgery of Pulmonary Tuberculosis. J. D. Steele, B. G. Narodick and A. V. Cadden.—p. 459.

*Segmental Resection for Pulmonary Tuberculosis (300 Cases). J. M. Chamberlain, C. F. Storey, R. Klopstock and C. F. Daniels.—p. 471.

Electrolyte Studies in Pericardial Resection. W. B. Crandell, A. Yeomans, D. L. Hoffman and G. H. Stueck.—p. 486.

Bronchial Closure in Pulmonary Resection: Clinical and Experimental Study Using Pedicled Pericardial Fat Graft Reinforcement. L. A. Brewer III, E. L. King, L. J. Lilly and A. F. Bai.—p. 507.

Circulation Through Atelectatic Lung in Man. V. O. Björk.—p. 533.

Resection of Multiple Pulmonary Metastases 14 Years After Amputation for Osteochondrogenic Sarcoma of Tibia. E. P. Mannix Jr.—p. 544.

Isoniazid in Pulmonary Resection.—Twenty-three patients undergoing pulmonary resection for tuberculosis were given isoniazid as a prophylactic antibacterial agent starting 48 hours before operation and continuing for two months after. These patients had not been previously treated with isoniazid but had in most cases received streptomycin and/or *p*-aminosalicylic acid. The tubercle bacilli of eight were resistant to streptomycin. There were no postoperative complications attributable to tuberculosis, though there were five complications from other causes. Isoniazid affords adequate protection from the tubercle bacillus during the operative period and for a minimum of two months after operation. Unfortunately, patients who have not already been treated with isoniazid are becoming increasingly rare; it is suggested that isoniazid be withheld from patients for whom pulmonary resection may be indicated in the future.

Segmental Pulmonary Resection.—A series of 300 consecutive patients who underwent segmental resection for pulmonary tuberculosis was followed for from one to five years. At the time this paper was written, 93.7% were alive and well, 3.3% were living but still had the disease, and 3% were dead. The indication for segmental or subsegmental resection is a fibrocaseous lesion with or without cavitation confined to one or two segments of a lobe, but still large enough that clinical opinion is doubtful of the patient's future security. The preoperative preparation is the same as for any major operation, with special attention to laminography and especially the lateral laminography. An anatomic segmental resection is done for moderate and far-advanced lesions. For minimal lesions, a wedge resection or local enucleation is possible. Subsegmental resections may also be done anatomically. Tuberculosis is usually bilateral though not bilaterally active. Only the major active focus is removed by segmental resection. The importance of other foci is dependent on the size and location. Anterior foci are less hazardous than posterior ones. The problem of overdistention is not great after segmental resection, but obliteration of the dead space is essential to success. Occasionally a periosteal plombage procedure without resection of the ribs is done for this reason. In obliterative pleuritis mobilization of the lung is not done when preoperative fluoroscopy reveals a good diaphragmatic movement. The functional loss is less if a small tailoring surgical procedure is done in the thoracic vault. Postoperative care must be vigilant. Patent airways (intratracheal suction), the control of pain, the use of antibiotics, the obliteration of dead space by complete reexpansion of the lung using active suction and checked by frequent postoperative x-ray examinations are important to a successful result.

Maryland State Medical Journal, Baltimore

2:527-572 (Oct.) 1953

Interrelations of Thyroid and Iodine Metabolism. T. S. Danowski. —p. 530.

*Excision of Aortic Aneurysms. H. T. Bahnson.—p. 537.

*Indications for and Results of Surgery for Mitral and Aortic Stenosis. R. P. Glover.—p. 547.

Non-Operative Treatment of Stress Incontinence in Women. L. R. Wharton.—p. 555.

Excision of Aortic Aneurysms.—Between January, 1952, and March, 1953, the author and his colleagues operated on 20 patients with aortic aneurysms with the intention of excising the aneurysms. Five of these patients died during or shortly after the operation. Of the 15 patients for whom the operation was successful, 3 were still in the hospital at the time this paper was written. The other 12 were well and essentially symptom-free. The author feels that excision is a better form of treatment for aneurysms in all sections of the aorta than ligation, wiring, so-called "cellophane wrapping," or endoaneurysmorraphy.

Surgery for Mitral and Aortic Stenosis.—Modern techniques of cardiac surgery have made the treatment of mitral and aortic stenoses possible by using the Glover-Avery guillotine and an aortic dilating instrument, respectively. Since surgical treatment is more beneficial to the patients in the early stages of these disorders than to those in the later stages, an increased responsibility rests with the physician to select these patients before their disease becomes so advanced that it presents dangerous complications or contraindications for surgery. Five hundred mitral commissurotomies have been performed by the author and his colleague. Of the first 164 patients surgically treated, 49% were restored to excellent health, 27% were improved in various degrees, 12% were unimproved, 6% died in connection with the operation, and 5% died later in the course of a one to four year follow-up. Twenty-two aortic commissurotomies were performed, six of which were combined with mitral commissurotomies because of bivalvular stenosis. Of these patients, four were restored to excellent health, nine were improved (including three with double commissurotomies), two were unimproved, and seven died (including three others with double procedures.) It is important to note that in both operative series no patients in the asymptomatic stage were operated on, and all patients in the second stage of the two diseases, when symptoms first began to appear, showed good results of surgery. The results became progressively poorer in the three later stages of stenosis with complications.

Mental Hygiene, Albany, N. Y.

37:529-712 (Oct.) 1953. **Partial Index**

Mental Health: Local Public-Health Responsibility. H. E. Jensen.—p. 530.
Progressive Industry and the Worried Employee. J. S. Felton.—p. 545.
Aspects of Mental Health in Teaching and Learning. P. Blos.—p. 555.
Maladjustment and Maternal Rejection in Retrolental Fibroplasia. H. Barry Jr. and F. E. Marshall.—p. 570.
How the Child Reacts to His Physical Defects. E. Podolsky.—p. 581.
Consultation Service to Public Schools by Mental-Health Team. K. J. Perkins.—p. 585.
Dynamics of Marital Relationship. A. Stone and L. Levine.—p. 606.
Halfway House: Role of Laymen's Organizations in Rehabilitation of the Mentally Ill. L. E. Reik.—p. 615.
Rates of Discharge and Rates of Mortality Among First Admissions to New York Civil State Hospitals: Third Paper. B. Malzberg.—p. 619.

Pediatrics, Springfield, Ill.

12:341-470 (Oct.) 1953

Maximum Breathing Capacity and Vital Capacity in Female Children and Adolescents. B. G. Ferris Jr. and C. W. Smith.—p. 341.
Total Amino Acid Composition in Mature Human Milk: Analysis by Ion Exchange Resin Column Chromatographic Technic. M. W. Cheung, E. L. Pratt and D. I. Fowler.—p. 353.
*Hypertensive Phase of Acute Nephritis: Specific Therapy with Derivative of Veratrum Viride. S. W. Royce.—p. 358.
*Syndrome of Congenital Hemihypertrophy, Shortness of Stature, and Elevated Urinary Gonadotropins. H. K. Silver, W. Kiyasu, J. George and W. C. Deamer.—p. 368.
Association of Escherichia Coli Serogroup 0111 with Two Hospital Outbreaks of Epidemic Diarrhea of Newborn Infant in New York State During 1947. E. Neter, R. F. Korns and R. E. Trussell.—p. 377.
Chronic Familial Nonspherocytic Hemolytic Anemia. E. L. Lipton, H. J. Grossman and J. B. Richmond.—p. 384.
Studies of Immunology of Newborn Infant: V. Effect of Dietary Protein on Antibody Production. J. Dancis, J. J. Osborn and J. F. Julia. —p. 395.
Diabetes Insipidus in Infancy Resistant to Pitressin. M. Yun-Chen Kao and M. M. Steiner.—p. 400.
Growth in Head Width During First 12 Years of Life. H. V. Meredith. —p. 411.
Payment for Hospital Care of Premature Infants. H. M. Wallace, L. Baumgartner, M. A. Losty and H. Rich.—p. 430.

Hypertensive Phase of Acute Nephritis.—Alkavervir (Veriloid) was given to five boys and one girl between the ages of 4 and 13 who were in the crucial hypertensive phase of acute nephritis that is difficult to control. The drug was administered intravenously in two phases: an initial, fairly rapid infusion of 0.022 cc. of alkavervir solution (diluted to a volume of 10 cc. with 5% dextrose solution) per kilogram of body weight, followed by a slow intravenous drip of 0.13 cc. of alkavervir solution per kilogram of body weight until a total of 22 cc. of the alkavervir solution per kilogram of body weight has been given at a speed of 5 drops per each 10 kg. of body weight and per minute. Prophylaxis of myocardial and cerebral damage resulting from a rapid rise of blood pressure is the main objective of treatment during the early phase of acute nephritis in children. Prompt remission of hypertension occurred in all patients after the administration of alkavervir. There was no evidence of toxicity of the drug and no undersirable side-effects other than mild nausea or vomiting were observed. The renal and cardiac status did not appear to be affected unfavorably by the treatment. The patients were followed for at least two years after the onset of their illness and remained well and normotensive. Although no ideal hypotensive agent is available at present, alkavervir deserves a therapeutic trial in children on a larger scale because of its capacity to reduce the peripheral resistance, to lower the blood pressure rapidly, and to maintain the blood flow and the cardiac output at normal levels.

Congenital Hemihypertrophy.—A syndrome of hemihypertrophy, shortness of stature, and elevated levels of urinary gonadotropins is described in a girl 5½ and a boy 6. In both of the patients the dwarfing and the asymmetry that involved one-half of the body had been present since birth, and elevated gonadotropins for the age of the patients were observed in both. Courses of thyroid extract were tried in both with no apparent acceleration of the rate of growth or gain in weight. Variations in urinary gonadotropins occur in ovarian or testicular agenesis in childhood, and shortness of stature and congenital abnormalities may be part of the clinical picture of this condition. The absence of the commoner congenital defects of that syndrome, such as webbing of the neck, cubitus valgus, coarctation of the aorta, and the presence of a normal uterus and tubes on rectal examination of the girl, and normal testes on palpation in the boy made the diagnosis of a variant of ovarian (testicular) agenesis unlikely. The syndrome described in the authors' patients and the syndrome of ovarian agenesis may be related conditions. A café-au-lait area of the anterior abdominal wall was observed in the girl, and, therefore, neurofibromatosis with involvement of the hypothalamic or pituitary region must be considered as a possible cause of the disturbance. No other manifestation of neurofibromatosis was observed in the girl, and no evidence of the disease was found in the boy with the same clinical syndrome as the girl. Although numerous concepts of the etiology have been suggested in the literature, the origin of congenital hypertrophy has not yet been satisfactorily explained.

West Virginia Medical Journal, Charleston

49:279-310 (Oct.) 1953

*Urinary Cloaca Fashioned from Short Distal Segment of Loop Colostomy: (Preliminary Case Report). T. P. Mantz and K. Kastl.—p. 279.
Radioisotopes in Clinical Medicine. W. K. Yates.—p. 282.
Duodenal Diverticula. J. C. Condry.—p. 286.
Fibromyomata of Uterus in Pregnancy. C. S. Flynn.—p. 288.
Chloral Hydrate: A Resumé. F. J. Moore.—p. 292.
Management of Common Allergic Diseases. M. Koenigsberg.—p. 295.

49:311-338 (Nov.) 1953

Carcinoma of Breast (Including Carcinoma in Situ) and Its Grades of Malignancy and Prognosis. A. C. Broders Sr.—p. 311.
Ectromelia: Case Presentation: (Final Report). J. C. Arnett.—p. 316.
Problems Facing West Virginia Hospitals in Providing Care for the Aged. W. R. Huff.—p. 318.
Closure of Tympanic Membrane Perforations by Chemical Cautery. D. W. Mullins.—p. 321.
Tumors of the Neck. L. H. Clerf.—p. 324.

Urinary Cloaca Formed from Segment of Loop Colostomy.—Ureterosigmoidostomy carries a high morbidity and mortality rate, and long survival is the exception. Hydronephrosis and pyelonephritis almost inevitably develop and are responsible for the high mortality. The use of isolated intestinal segments as bladder substitutes has greatly reduced the early and latent kidney complications that inevitably develop when ureterointestinal anastomosis is made into the intact bowel; however, an accessory abdominal opening is necessary. In the case presented, Mantz and Kastl transplanted the ureters into a more satisfactory urinary receptacle, namely into a distal segment of a loop colostomy. This bowel segment is independent of the fecal stream. The chance of retrograde infection is less. There is no obstruction to the urinary outflow. Because of these advantages and the simplicity of this technique, pelvic exenteration could become more widely used. Selected cases of postirradiation recurrent cancer of the cervix might be surgically treated more frequently if the late complications of kidney infection, ureteral obstruction, and electrolyte disturbance could be prevented. In the first stage of this procedure, a loop colostomy is done. At a later date, the ureters are transplanted into the short distal segment of the loop colostomy; this is followed by pelvic exenteration. The described method insures an unobstructed flow of urine, without back pressure and direct contamination of the ureteral orifice. This common opening on the abdominal wall seems to be a most desirable method and works very well with a Rutzen bag.

FOREIGN

Archives of Disease in Childhood, London

28:343-422 (Oct.) 1953

Hepatic Cirrhosis Associated with Fibrocystic Disease of Pancreas: Clinical and Pathological Reports of Five Patients. R. Webster and H. Williams.—p. 343.

*Congenital Hypertrophic Pyloric Stenosis in Twins. J. D. Metrakos. —p. 351.

Case of Fanconi's Syndrome with Study of Peroxidase Activity of Erythron. O. Higashi, E. Koseki and M. Higuchi.—p. 359.

Erythrogenesis Imperfecta or Congenital Hypoplastic Anaemia (Diamond-Blackfan Type). O. D. Fisher and F. M. B. Allen.—p. 363.

Favism in London. J. H. Diggle.—p. 369

A.C.T.H. in Nephrosis. G. C. Arneil and H. E. C. Wilson.—p. 372.

*Response of Acute Anterior Poliomyelitis to Adrenergic Blocking Agents and Hot Pack Therapy. W. W. Whitten and J. G. Cramer.—p. 381.

Observations on Pyuria in Children. J. M. Stansfeld and J. K. G. Webb. —p. 386.

Classification of Enuresis. E. M. Poulton and E. Hinden.—p. 392.

Foetal Ascites. J. M. Lord.—p. 398.

Urticaria Neonatorum (Erythema Toxicum Neonatorum). H. V. L. Finlay and J. P. Bound.—p. 404.

Investigation into Certain Aspects of Pertussis. C. W. Kesson and M. Harling.—p. 409.

Skin Thrush in Early Infancy. A. Holzel.—p. 412.

Pyloric Stenosis in Twins.—The occurrence of pyloric stenosis in twins is presented. In four pairs of monozygous twins, both twins were affected in three pairs and one twin was affected in the fourth pair. In one dizygous pair, only one twin was affected. These five pairs are combined with 127 pairs reported in the literature, and an analysis is made employing the "twin method." For the final analysis only those cases were accepted in which the hypertrophic pylorus was identified unequivocally at operation or at necropsy and in which there was ample evidence to support either monozygous or dizygous origin. Of the 132 pairs, only 47 satisfied these conditions. Of these, 18 were monozygous and 29 dizygous. In 12 (66.7%) of the monozygous pairs, both twins had the condition, whereas in only 1 (3.49%) of the 29 dizygous pairs both twins had the condition. From a study of cases in twins, therefore, there seems to be little doubt that there is a hereditary factor involved in the etiology of hypertrophic pyloric stenosis. It also appears that some prenatal or postnatal factor may be necessary for the development of the hypertrophy and that such an environmental factor may be effective in only one of a pair of twins even when the twins are genetically alike.

Acute Anterior Poliomyelitis.—The effects of tolazoline (Priscoline) hydrochloride, Dibenamine hydrochloride (N,N-dibenzyl-β-chloroethylamine), and hot packs on muscle spasm and pain of *patients with acute anterior poliomyelitis* were studied. Although the number of patients studied was too small for a significant statistical comparison of the results of all forms of therapy, the following conclusions were made. Relief of severe subjective pain at rest is practically always accomplished within one-half to 8 hours after administration of tolazoline or Dibenamine, whereas packs are much less effective and take considerably longer. Relaxation of muscle spasm with drugs is either quite definite or completely absent, suggesting that more than vasospasm may be etiologically involved. At least 50% of the patients responded favorably enough to eliminate the need for hot pack therapy. Although actual limitation of mobility might still remain after the administration of drugs in some cases, stretch pain in muscle was frequently eliminated, permitting early physical therapy. In some cases, initial improvement after receiving drugs was superseded by severer spasm in five or six days. In those cases tested with Dibenamine, this was found to result from the use of the oral route which is ineffective. Early active and passive motion within the limits of pain must be instituted along with drug therapy for favorable results. No severe toxicity was observed with administration of either drug. In general, drug therapy is worthy of trial in most cases of poliomyelitis as the presence or lack of response will soon be evident; early use of hot packs, if necessary, will not be delayed. In this study, the muscles in patients with the highest temperature were in spasm, followed by weak and then by normal muscles. Response to therapy in terms of muscle temperature was greatest in weak muscles. No abnormally low skin temperatures were observed, and the response to Dibenamine was more marked than to tolazoline. In terms of muscle temperature, the effective therapeutic response was greatest when administration of Dibenamine was followed by that of tolazoline and hot packs. No obvious absolute muscle ischemia was noted, but it is suggested that increased tissue metabolism may create a relative anoxia that may be relieved by an increase in blood flow. Hypersensitivity of denervated muscles to acetylcholine may be enhanced by adrenolytic agents and may, therefore, explain the marked temperature increase following therapy. Further studies on tissue metabolism and blood flow are indicated before an adequate explanation will be available for muscle spasm and pain.

Archivum Chirurgicum Neerlandicum, Arnhem

5:169-252 (No. 3) 1953. **Partial Index**

*Renal Carbuncle. E. A. Immink.—p. 174.

*What Determines the Incidence of Acute Appendicitis (Statistical Observations). A. Grassberger.—p. 180.

Method for Treatment of Low Ureteral Strictures by Means of Catheter-Led Flexible Dilator. H. P. Vlietstra.—p. 197.

Treacher-Collins Syndrome (Mandibulo-Facial Dysostosis). A. Barendregt. —p. 209.

*Present Status and Future of Resection Therapy in Pulmonary Tuberculosis. (Based on Experiences of 790 Resections in 1943-1953). L. D. Eerland.—p. 213.

Transplantation of Formaldehyde-Preserved Human Aortic Graft in Case of Accidental Injury of Abdominal Aorta. M. W. Van Weel.—p. 233.

Renal Carbuncle.—Immink presents the histories of three patients with renal carbuncle. All three were treated with penicillin. In two of them, a boy, aged 9, and a woman, aged 36, treatment with penicillin was followed by cure, but in the third patient, a man, aged 52, pyrexia persisted despite treatment with large doses of penicillin. Four weeks after admission, the right kidney was exposed. An inflammatory growth the size of a swan's egg was found, with a thick, inflamed wall. Three liters of cream-colored, odorless pus were removed by puncture, after which the large sac collapsed. A small, apparently normal, part of the kidney was found on its under surface. The inflammatory process appeared to have originated from the upper pole and completely destroyed the remainder of the kidney. The process extended into the true pelvis. Since partial nephrectomy would probably have given rise to disturbances in wound healing, the right kidney was completely extirpated. The postoperative course was uneventful. The microscopic study of the surgical specimen disclosed an abscess membrane originating from a renal carbuncle. The author believes that spontaneous recovery from renal carbuncle is rare. Only intravenous pyelography affords a means of verification and of preventing a sudden flare-up of an apparently spontaneously healed process. The dose of penicillin should be increased if there is no response, but absorption is no longer possible once an abscess has formed. It is possible, however, to obtain sterilization of the pus by penicillin treatment. The duration of treatment is determined by the erythrocyte sedimentation rate and the leukocyte count. It may be said that penicillin treatment has reduced the number of surgical cases from 80 to 40%.

Incidence of Appendicitis.—This report is based on a total of 3,229 cases of acute appendicitis that were observed during the period from 1932 to 1950. The sex distribution was about even. During the years of poor nutrition, the incidence of acute appendicitis decreased greatly. One-fourth of all cases occurred in children under 14, another fourth in those between 15 and 18 years, a third fourth in persons between 19 and 28, and the last fourth in persons 29 and over. There exists a predisposition in youth and in women up to the menopause. The mortality of acute appendicitis was 1.52%. Perforation existed on admission in 10.52%; 13.87% of these died. Of the patients with perforation, 29% were less than 5 years old; the percentage decreased with increasing age, but increased again after the age of 40. Perforation is more frequent in men than in women, but men survive perforation oftener than women. The author believes that the incidence of appendicitis can be reduced by avoiding excessive intake of fat and meat and by providing an adequate amount of roughage in the diet, particularly in the age groups that seem predisposed.

Resection in Pulmonary Tuberculosis.—Eerland says that a total of 790 pulmonary resections for tuberculosis were carried out by him and Dr. Oterdoom since 1943. This review is concerned chiefly with 745 patients operated on before June, 1953, and of whom 204 were subjected to pneumonectomy, 217 to lobectomy, and 324 to segmental resection sometimes combined with lobectomy. There were 16 surgical deaths (2.1% of 745), and 17 died later (15 of tuberculosis). Of the first 249 patients, who had been operated on more than two years ago, 224 are still alive, and 87% of them lead a normal active life. The sputum has become negative in the same percentage of cases. The results in 167 patients who were subjected to segmental resection and who had been observed for from eight months to three years are encouraging. There were no deaths, and the functional results were good. Of the 162 patients, 147 had negative sputum and 106 again led an active life; 22 were working half time. In 15 patients, resection had to be repeated. A bilateral resection was successfully performed in 16 patients. Emphasis is placed on the fact that pulmonary resection is only part of the therapy. After the operation the patients still require a rest cure in a sanatorium. The author believes that the efficient organization of the combat of tuberculosis in Holland is largely responsible for the good results obtained with resection. From the onset, the patients are always under the care of specialists in tuberculosis.

British Journal of Ophthalmology, London

37:641-704 (Nov.) 1953. Partial Index

Bulbar Pressure Test in Glaucoma. P. L. Blaxter.—p. 641.
Cataracts in Galactosaemia. F. D. McAuley.—p. 655.
Definition of Visual Acuity. M. Gilbert.—p. 661.
Anterior Flap Sclerotomy with Basal Iridencleisis. H. B. Stallard.—p. 680.
Congenital Toxoplasmosis. J. Hill.—p. 689.

British Journal of Surgery, Bristol

41:113-224 (Sept.) 1953

*Gastrojejunocolic Fistula. A. G. R. Lowdon.—p 113.
Colo-Colic Intussusception in Adult. D. H. Teasdale.—p. 128.
V-Y Correction for Varus Deformity of Fifth Toe. J. N. Wilson.—p. 133.
Adenocarcinoma of Appendix. S. G. Nardell.—p. 136.
Solitary Pyogenic Abscess of Liver Treated by Closed Aspiration and Antibiotics: Report of 14 Consecutive Cases with Recovery. A. J. S. McFadzean, K. P. S. Chang and C. C. Wong.—p. 141.
Recurrent Perforation of Jejunum Due to Lymphosarcoma. H. M. Bradmore and C. G. Scorer.—p. 152.
Cholecystitis Glandularis and Diverticula of Gall-Bladder. E. S. J. King. —p. 156.
*Results of Vagotomy in Treatment of Peptic Ulcer. B. H. Hand and D. H. Patey.—p. 161.
Molluscum Sebaceum. J. M. Beare.—p. 167.
Roux Loop. P. R. Allison and L. Tavares da Silva.—p. 173.
An Unusual Combination of Aberrant Hepatic Arteries. C. P. Mills. —p. 181.
Scrotal Cystoceles: Report of Case with Papillomata. R. Marcus.—p. 182.
Meconium Ileus: Report of Successfully Treated Case and Study of Surgical Aspects of Series of 14 Cases. H. H. Nixon.—p. 184.
Relief of Pain in Chronic Pancreatitis by Sympathectomy. D. M. Morrissey.—p. 189.

Gastrojejunocolic Fistula.—A fistulous communication between the transverse colon and the stomach or jejunum occurred in 40 men and 1 woman after gastroenterostomy performed for duodenal ulcer and occasionally for gastric ulcer. Four of the 41 patients had recurrence of fistula after surgical treatment, and in 1 of these a second recurrence occurred. Thus 46 separate fistulas are included in the author's report. The types of anastomosis that preceded these 46 fistulas were posterior gastroenterostomy in 39, anterior (antecolic) gastroenterostomy in 2, partial gastrectomy in 4 (2 with retrocolic and 2 with antecolic anastomoses), and Devine's pyloric exclusion operation in 1. The interval between these previous operations and the onset of symptoms of fistula varied from 1 month to 21 years. The triad of symptoms that is conclusive evidence of a fistula includes diarrhea, fecal vomiting, and loss of weight. In 3 of the 41 patients, however, there were no symptoms attributable to the fistula except occasional lower abdominal pain. Diarrhea, which was associated with 41 of the 46 fistulas, results from irritation of the small intestine by colonic content and is not attributable to gastric contents entering the colon through the fistula. Barium meal examinations were carried out in 22 patients and in 14 of these the fistula was not demonstrated; 32 patients were studied by barium enema and the fistula was demonstrated in 31 of these. The diagnosis thus can be confirmed by barium enema, while a barium meal may fail to demonstrate even a large fistula. The severity of the disease is variable. Only five patients had mild symptoms and were in good general condition, but most had severe diarrhea, and nutritional deficiencies rapidly developed that made them poor surgical risk and required relief as far as possible by preoperative parenteral therapy. The only effective treatment is surgical. Operation, in addition to removing the fistula, should include measures to relieve the ulcer diathesis. The few patients whose general condition is good and in whom the region of the fistula is not inflamed may justifiably be treated by excision of the fistula and partial gastrectomy in one stage, but most patients with this complication are not fit for an operation of such magnitude and should be treated by an operation in stages. The first stage should be a proximal transverse colostomy: this minor intervention is followed by relief of diarrhea and rapid improvement of general health. The definitive operation is performed two or three months later and should include resection of at least four-fifths of the stomach. The colostomy is closed two or three weeks later. The patient should be seen at regular intervals after this treatment, and if evidence of recurrent gastrojejunal ulcer is found a transthoracic vagotomy should be performed immediately. If a fistula occurs after adequate partial gastrectomy, a left thoracoabdominal exposure permits excision of the fistula and thoracic vagotomy.

Vagotomy in Treatment of Peptic Ulcer.—Between 1946 and 1950, vagotomy, either alone or, more commonly, combined with some other operative procedure, was performed in 60 men and 12 women with 70 duodenal ulcers and 5 jejunal ulcers. Of the 75 ulcers, 9 were treated by transthoracic vagotomy, 8 by transabdominal vagotomy, 32 by transabdominal vagotomy combined with pyloroduodenectomy, 9 by transabdominal vagotomy combined with gastrojejunostomy, and 17 by transabdominal vagotomy combined with gastrectomy. Two of the 72 patients died postoperatively, a mortality rate of 2.8%; one additional patient died after operation for gastric ulcer that recurred as a complication of the first operation; the total mortality rate thus was 4.2%. Gastric ulcer is a complication of vagotomy for duodenal ulcer, particularly of simple vagotomy (3 of 12 patients). It is less common in the combined procedures. The duodenal ulcer recurred in 5 of 12 cases of simple vagotomy and in 4 of 28 cases of vagotomy combined with pyloroduodenectomy. Ulceration also recurred in one out of eight cases of vagotomy combined with gastroenterostomy. There was no recurrence in 17 cases of vagotomy combined with hemigastrectomy, but follow-up of these cases was only for from one to two years. Vagotomy resulted in healing of all five gastrojejunal ulcers, but a gastric ulcer developed in one case in which vagotomy had been combined with gastroenterostomy. The immediate postoperative course of the patients with vagotomy was frequently anxious and stormy because of the pronounced gastric and duodenal atony. The abdomen may have to be reopened, and the atony may even result in death. Analysis of the postoperative results in relation to the barium meal findings showed no close relation with these findings, but some relation with the findings of the test meal was observed. A late postoperative morbidity in the patients with successful vagotomy was comparable with, although less severe than, that observed after subtotal gastrectomy. As with subtotal gastrectomy, these late symptoms are usually minor in their upsetting effect when compared with the original ulcer symptoms. The authors' present opinion is that the only group of cases of peptic ulcer in which vagotomy has an established position as a routine procedure is that of gastrojejunal ulcer after subtotal gastrectomy.

British Medical Journal, London

2:951-1004 (Oct. 31) 1953

Place of Forceps in Present-Day Obstetrics. T. N. A. Jeffcoate.—p. 951.
"Failed Forceps": Review of 37 Cases. R. G. Law.—p. 955.
Sickle-Cell Anaemia in Accra District of Gold Coast: Review of 20 Cases. G. M. Edington.—p. 957.
Health Visitor and Family Doctor. L. Roberts.—p. 962.
General Practitioner and Health Visitor. J. S. Thomas.—p. 964.
Hydrocortone and Soft-Tissue Lesions. J. Cyriax and O. Troisier.—p. 966.
Technique and Value of Aortography: Report of Case of External Iliac Arterial Graft. R. E. Horton and E. M. Nanson.—p. 969.
*Value of Single-Sample Test in Differential Diagnosis of Jaundice. I. Wang.—p. 971.
Fluid Content of Nucleus Pulposus as Factor in Disk Syndrome: Preliminary Report. A. Naylor and D. L. Smare.—p. 975.

Differential Diagnosis of Jaundice.—In cases of jaundice in which the clinical picture is problematical, biochemical tests, by suggesting an earlier solution, can be of value. On the one hand, the dangers of an unnecessary exploratory operation in a case of hepatogenous jaundice must be avoided, and, on the other, the patient must be guarded from the harmful effects of prolonged extrahepatic obstruction. The "single-sample tests" have the advantages of simplicity in obtaining the specimen with minimal discomfort to the patient, along with economy in time to the patient and the physician. However, many such single sample tests involve a number of biochemical determinations employing a wide range of tests. Bearing in mind that this is a clinical problem, the simpler tests, which can be carried out in any hospital laboratory, must be given prior consideration. The author investigated a series of blood tests regarding the value of these determinations for inclusion in a single sample test for the differential diagnosis of jaundice. Of the tests employed, the serum alkaline phosphatase activity, serum total cholesterol, and thymol turbidity were found to be of most significance. Determination of the plasma protein fractions was of no value and should be omitted from any single sample test. Tests for urobilinogen and urobilin in the urine were of value as supplementary information where the results of the blood tests were equivocal. Critical levels in the blood tests for the differentiation of hepatogenous from obstructive jaundice are suggested. Applying these criteria in a series of 104 cases of jaundice, the correct diagnosis of the type of jaundice was made in 91 cases. Of the remaining 13 cases, two gave equivocal results, while in 11 the biochemical findings were frankly misleading.

Bull. World Health Organ., Geneva

9:457-706 (No. 4) 1953. **Partial Index**

Plague Studies: 10. Control and Prevention. R. Pollitzer.—p. 457.
Epidemiological Investigations on Q Fever in Turkey. S. Payzin.—p. 553.
Immunological Classification of 25 European Strains of Poliomyelitis Virus. J. D. Verlinde, B. Hofman and E. Nihoul.—p. 559.
Stable Suspension for Vi-Agglutination Tests. K. Ando and H. Shimojo.—p. 575.

Deutsche medizinische Wochenschrift, Stuttgart

78:1489-1524 (Oct. 30) 1953. **Partial Index**

Campaign Against Cancer. H. Hellner.—p. 1489.
Tapeworm Cures (Taenia Saginata). R. Wigand and W. Warnecke.—p. 1493.
*New Form of Corticotropin Therapy in Rheumatic Polyarthritis. R. Prosiegel, A. Goelkel and U. Fuchs.—p. 1494.
Prophylaxis of Tetanus by Active Immunization. R. Hasche-Klünder and M. Pichert.—p. 1499.
Appendicitis in Nursing Infants and Young Children. H.-J. Wissfeld.—p. 1502.

New Form of Corticotropin Therapy in Rheumatic Polyarthritis.—The new form of corticotropin therapy discussed by Prosiegel and associates represents a modification of the cortisone-insulin therapy recommended by Henderson and others in 1951 and of Gordon's recommendation for infusing corticotropin by means of an intravenous drip. It was hoped that the addition of insulin would reduce the effective dose of corticotropin and thus make possible the continuation of corticotropin therapy over a longer period. The treatment was tried on 11 patients with chronic polyarthritis who were hospitalized throughout their treatment. During a preliminary period of eight days the clinical symptoms of the patients were estimated and at the same time their basic corticoid values were established. Some of the patients showed typical deformities, stiffening, and contractures and all had severe pains. The polyarthritis had existed for from 2 to 20 years. During the first five days of treatment, the patients were given daily 20 units of a corticotropin preparation by intravenous drip in from 400 to 800 cc. of Ringer's solution, over a period from six to eight hours. In the majority of patients, the pain subsided during these five days. In two cases in which this did not occur, this treatment was continued for another five days. During the second period in which the therapeutic effects were to be stabilized and further improved, the patients were given daily 8 units of corticotropin together with insulin, again in the form of an intravenous drip. Treatment was always interrupted during the last two days of the week. The insulin sensitivity of each patient varied greatly. Usually the initial dose of insulin was 8 units and this amount was increased by 2 units each day, but the daily dose never exceeded 20 units of insulin. Care was taken that no hypoglycemic manifestations occurred. In order to keep symptoms such as sweating and tremor in abeyance many of the patients were given 50 gm. of dextrose per day in the infusion fluid, during the last few weeks of the treatment. The results of treatment were quite satisfactory and corresponded on the whole to those obtainable with larger intramuscularly administered doses of corticotropin. Maintenance of the therapeutic effects required continued administration of small doses of corticotropin. The elimination of corticoids in the urine was generally high and did not decrease until therapy was interrupted. When only insulin was administered, or only small doses of corticotropin without insulin, the corticoid values in the urine were not so high. The authors discuss the possibility that insulin increases the synthesis of biologically active hormones of the adrenals.

Journal of Physiology, Cambridge

122:1-208 (Oct.) 1953. **Partial Index**

Kinetics of Penetration of Blood-Aqueous Barrier. H. Davson and P. A. Matchett.—p. 11.
Coagulation in Lymph. P. Fantl and J. F. Nelson.—p. 33.
Activity of Human Sweat Glands During Exposure to Cold. E. M. Glaser and T. S. Lee.—p. 59.
*Changes in Alveolar Carbon Dioxide Tension by Night and During Sleep. J. N. Mills.—p. 66.
Failure of Kidney to Respond to Respiratory Acidosis. D. Longson and J. N. Mills.—p. 81.
Muscle Spindles in Intrinsic Muscles of Human Tongue. S. Cooper.—p. 193.
Effect of Sodium Fluoride on Gastric Acid Secretion. J. Y. Bowie, G. Darlow and M. M. Murray.—p. 203.

Alveolar Carbon Dioxide Tension: Diurnal Rhythm.—Mills says that in the course of other work he together with Longson and Stanbury made many series of alveolar carbon dioxide determinations on subjects either fasting or with minimal hourly food intake, sometimes for 24 hours or more, and these provide data for consideration of diurnal rhythms. These were supplemented with determinations during sleep, either throughout the night or during short afternoon naps. Alveolar sampling during sleep presents difficulties, and since no technique is quite unobjectionable, several methods have been used. The studies reported here revealed that alveolar carbon dioxide tension sometimes shows a diurnal rhythm, with high values during the night even in subjects who remain awake fasting in constant conditions of rest or light activity. Alveolar samples collected by suction or by an end-tidal sampler during nocturnal sleep show a rise of tension no greater than that shown during sleepless nights. During afternoon sleep, assisted by hexobarbitone, the tension does not rise. Some of the Haldane-Priestley samples collected from a subject awakened by an alarm clock had high tensions. It is concluded that sleep per se, even deep sleep, may cause at most a trifling change in alveolar carbon dioxide tension, but that periods of very deep natural sleep occur when a mouth piece is not retained and the tension rises considerably.

BOOK REVIEWS

The Oxford Medicine by Various Authors. Volume VIII. Edited by Henry A. Christian, A.M., M.D., LL.D. Cloth. Loose-leaf. $25. Pp. 965. Oxford University Press, 114 Fifth Avenue, New York 11, 1953.

This book deals with the treatment and prevention of those diseases that are commonly seen by the general practitioner or the internist. Diagnostic and etiological data are omitted, because they are to be found in other volumes of this series. Treatments usually carried out by surgeons or other specialists have also been omitted. The book is bound with a flexible cover in a loose leaf binder so that individual chapters can be revised from time to time. Dr. Burgess Gordon states in the introduction that, "throughout the ages treatment has been the most difficult and unsatisfactory part of medicine," and points out that physicians having swung from empiricism to nihilism are now witnessing a great new era of specific chemotherapy. The authors have been conservative, including only those new modes of treatment that experience has proved effective. A short bibliography is included at the end of most chapters. It is noted with approval that leprosy is consistently referred to as Hansen's disease. In discussing amebiasis the authors appear to be a little overenthusiastic about emetine and the antibiotics, but this is a minor matter in a book that should prove an invaluable reference work for both student and practitioner. One source of annoyance is the use of paper that is thin enough to allow the print on the opposite side to show through. The index is excellent, and the book is highly recommended.

Films in Psychiatry, Psychology & Mental Health. By Adolf Nichtenhauser, M.D., Marie L. Coleman, and David S. Ruhe, M.D. Medical Audio-Visual Institute of Association of American Medical Colleges. Cloth. $6. Pp. 269, with illustrations. Health Education Council, 10 Downing Street, New York 14, 1953.

A distinct service has been performed to the field of mental health by publication of this volume. The text is preceded by a gallery of scenes from the films described. Professional persons, acquainted with the meaning of these sequences extracted from excellent educational films, will find them an incentive to further perusal of the book. A careful pruning of this material would have made the book even more valuable. For each film there is a general description, an indication of the audience for whom it is intended, production data and the name of the distributor, a description of the content, an appraisal of the presentation and effectiveness, and a section on utilization that elaborates on some of the previously covered points. The study includes the evaluation of 51 films under the sponsorship of the Association of American Medical Colleges and five foundation funds. Although the use of "psychiatrically oriented discussion leaders" is urged in most instances, the reader is never advised where such leadership might be procured. For example, the role of mental health associations and societies is omitted; there is no reference to state mental health authorities; the medical and paramedical staffs of inpatient and outpatient psychiatric facilities are not mentioned; and the authors have failed to acquaint their readers with the resources offered by psychiatrically oriented pediatricians, psychiatric social workers, school social workers, family casework and child care agencies, and specially trained educators in nursery schools for mentally retarded and trainable children. There is an abundance of "creative and talented discussion leaders," but there is a paucity of such persons with competence in the field of mental health. Persons with competence in mental health should be invited to discuss these films. In other words, the promotion of education via audiovisual aids has preceded the development of public understanding of professional services. This aspect of community education is overlooked by the authors.

The lumping together of such films as "Children's Emotions" and "The Steps of Age" with "The Feeling of Hostility" and "Out of True" is questioned. The volume, supposedly, is directed to all audiences. Not many persons in this universal group could distinguish between the superficial and the soundly based offerings. No member of the mental health team can fail to appreciate this pioneer effort to acquaint the field with detailed information on films that do or do not advance the understanding of human behavior with relation to mental health or mental illness. Perhaps a second or third attempt will result in the production of a better focused, more readable volume on the subject.

Method and Theory in Experimental Psychology. By Charles E. Osgood, Associate Professor of Psychology, University of Illinois, Urbana. Cloth. $14. Pp. 800, with 223 illustrations. Oxford University Press, 114 Fifth Ave., New York 11, 1953.

This valuable new reference book brings up-to-date the experimental work in human behavior. The author is eminently qualified for the task he has set himself, namely, to present "an evaluation of experimental literature in close relationship to modern theoretical issues." As a teacher and researcher in the field of experimental psychology for many years, he has contributed a number of noteworthy additions of his own, especially in the area of learning theory. The fact that the book was reviewed and criticized prior to publication by a number of recognized authorities has made it highly acceptable. In format and print it is especially good. It is not, as are many such books, overly difficult to read in terms of specialized psychological terminology. The author has stressed the newer area of symbolic processes, including language and communication, in a thought-provoking section. His own special field of learning theory receives a much needed critical evaluation, and the more frequently emphasized fields of sensory and perceptual processes are given adequate coverage. The list of references is exhaustive. Simply presented, easily readable, and well illustrated, this broad exposition of the experiments leading to an understanding of human behavior offers a useful reference volume. That part of the medical profession interested in the behavioral sciences should find it of extreme value and a worthwhile addition to their library facilities. To all those interested in present day experimental approaches to human behavior, the book should be a welcome addition to their resources on experimentation, classic research design, and modern theory in basic psychology.

History of the Second World War, United Kingdom Medical Series. Editor-in-Chief: Sir Arthur S. MacNalty, K.C.B., M.D., F.R.C.P. Medical Research. Edited by F. H. K. Green, C.B.E., M.D., F.R.C.P., and Major General Sir Gordon Covell, C.I.E., M.D., D.T.M. Cloth. £2. Pp. 387. Her Majesty's Stationery Office, P. O. Box 569, London, S.E.1, 1953.

This volume of the official medical history of World War II describes the research promoted by the medical research council and various government departments and also research promoted directly by the fighting services. While the work of the council was greatly expanded during those eventful years, there are some omissions from this volume, because certain subjects have been adequately covered in earlier volumes of the series. There is little or no mention here of wartime research in psychiatry or of wartime advances in anesthesia and in technical methods of surgery. Considerable similarity exists between the text of this volume and that of the report of the medical research council for 1939-1945, which was published in 1948 under the title "Medical Research in War." The chapters in this book include discussions of the safety and efficiency of the fighting man, wounds and injuries, war diseases (dyspepsia, tuberculosis, influenza, infectious hepatitis, serum jaundice, malaria, typhus fever, dysenteries, sprue, Q Fever, and poliomyelitis), nutrition and malnutrition, public health, sulfonamides and the development of penicillin, biochemical research,

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These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically stated.

chemical defense research, and the biological effects of explosions. The chapter most interesting to practicing physicians probably is that on sulfonamides and the development of penicillin, in which there is a considerable history of the early research and clinical work of these revolutionary medical discoveries. The many references listed after each chapter are admittedly not complete and are almost entirely confined to British work; only a few publications from the United States and elsewhere are mentioned. Such omissions were intentional and understandable in a history of British medical research. As the editor-in-chief, Sir Arthur MacNalty, says, "Abundant evidence will be found in this volume to show how great were the advances made in medical sciences during this period."

Bailey's Text-Book of Histology. Revised by Philip E. Smith, Ph.D., Sc.D., and Wilfred M. Copenhaver, Ph.D., Professor of Anatomy, College of Physicians and Surgeons, Columbia University, New York. With assistance of Dorothy D. Johnson, Ph.D., Assistant Professor of Anatomy, College of Physicians and Surgeons, Columbia University. Thirteenth edition. Cloth. $9. Pp. 775, with 442 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1953.

A substantial amount of revision has resulted in this new edition of a classic textbook. There are nearly 100 new figures, many of them replacing older pictures but several, such as the electron micrographs, covering subject matter not included in earlier editions. The material in chapter 1 on the cell has been entirely rewritten to include recent advances in our knowledge of nucleic acids, enzymes, etc. Throughout the rest of the book, changes have been made to incorporate pertinent new information provided by the fields of histochemistry, electron micrography, and physiology. The more extensive use of bold-type headings improves the already clear and logical division of text matter. Reference lists at the end of each chapter have been brought up-to-date. The book does not pretend to be a source work for instructors or research investigators, although it covers the field more than adequately and is still one of the best histology texts available for medical and dental students.

The Management of Pain with Special Emphasis on the Use of Analgesic Block in Diagnosis, Prognosis, and Therapy. By John J. Bonica, M.D., Director, Department of Anesthesia, Tacoma General and Pierce County Hospitals, Tacoma, Washington. Cloth. $20. Pp. 1533, with 785 illustrations. Lea & Febiger, 600 S. Washington Sq., Philadelphia 6, 1953.

This book, which may serve as a textbook or a reference book, deals with the fundamental aspects of pain and the various methods of its management with special relation to analgesic blocks. The anatomic, physiological, and psychological aspects are ably discussed. Regional anesthesia is described in full detail with relation to drugs, doses, vasoconstrictors, armamentarium, and principles. This comprehensive book is well written and well illustrated. It should be in the library of every physician interested in anesthesia.

Sports Medicine. Edited by M. J. Karvonen, M.D., Ph.D. Proceedings of International Symposium of Medicine and Physiology of Sports and Athletics at Helsinki 17-18. 7. 1952. Paper. $3. Pp. 229, with illustrations. Suomen urheilulääkäriyhdistys, Finnish Association of Sports Medicine; distributed by Finnish Bookshop, Helsinki, 1953.

This work reports the results of an international symposium held in Helsinki just before the Olympic games in 1952. Nine of the contributions are in German, two in French, one in Spanish, and the rest in English. The contributions from Russia and other countries are presented in one or another of these four languages. The diversity of viewpoints and the inclusion of original data give the book a permanent documentary value. Some of the contributors, apparently ignorant of mathematics beyond the process of computing averages, do not seem to have known what to do with their material but deserve credit for making their figures available to other investigators. Of particular interest in this volume are the many passages (pages 18 to 24, 93 to 95, 116, 121 to 126, 145 to 154, 157, and 227) relating to the heart. Putting all the curious results together, one can only conclude that physicians who allow newspaper photographers to picture them applying a stethoscope over a pugilist's heart are making themselves ridiculous. Relating further to pugilism is a commendable study by a Finnish contributor of the electroencephalograms of seven former boxers and of two younger men with recent cerebral damage after boxing. This paper is followed by a vigorous discussion in English, which condemns boxing in words that every physician dealing with athletes should read. The editors and publishers have produced an outstanding work in languages not their own. It is recommended as containing something of value for every medical reader.

Lehrbuch der Geburtshilfe. Herausgegeben von Prof. Dr. Th. Koller, Direktor der Universitätsfrauenklinik in Basel, Prof. Dr. E. Held, Direktor der Universitätsfrauenklinik in Zürich, und Prof. Dr. W. Neuweiler, Direktor der Universitätsfrauenklinik in Bern. Bearbeitet von Prof. Dr. E. Held, et al. Band II, Lehrbuch der Geburtshilfe und Gynäkologie, herausgegeben von E. Anderes, H. Guggisberg, und Th. Koller. Second edition. Cloth. 62.40 Swiss francs. Pp. 907, with 348 illustrations. S. Karger, Holbeinstrasse 22, Basel, 1953.

The second edition of this book has been drastically reduced in size and is now printed in one volume instead of two. Much of the text and many of the illustrations had to be eliminated to accomplish this. The section dealing with fetal monsters is still too large and contains more than a fourth of all the illustrations in the book. The book is divided into 13 sections written by nine collaborators: E. Held, O. Kaeser, Th. Koller, A. Reist, H. Schultheiss, R. Wenner, A. Werthemann, H. Welli, and S. Wolf-Heidegger. The section subjects are (1) human embryology and morphology of the newborn, (2) normal pregnancy, (3) normal labor, (4) the puerperium, (5) physiology of the newborn, (6) multiple pregnancy and labor, (7) breech presentation, (8) pathology of pregnancy, (9) extrauterine gestation, (10) dystocia, (11) pathology of the puerperium, (12) fetal monsters, and (13) pathology of the newborn. Almost the entire field of obstetrics is covered, but there are a few omissions, such as amniotic fluid embolism and the lower nephron syndrome. All of the contributors are experienced obstetricians and teachers, and the information given about obstetric physiology and pathology is accurate. The advice given about the conduct of labor and obstetric complications is conservative and authoritative. In spite of the fact that nine men contributed to this book, the data are presented in a clear and uniform style. The illustrations are numerous, clear, and well reproduced. This volume should be even more popular than the first edition, because it is undoubtedly one of the best textbooks on obstetrics written in German.

The Allergic Patient and His World Including Sources of Allergens. By Florence Eastty Sammis, M.D., M.S.P.H., F.A.A.A., Assistant Attending Physician in Allergy, Nassau Hospital, Mineola, New York. Publication number 157, American Lecture Series, monograph in Bannerstone Division of American Lectures in Allergy. Edited by Max Samter, M.D., Chief, Allergy Clinic, University of Illinois College of Medicine, Chicago. Cloth. $4.75. Pp. 156, with illustrations by Oren C. Durham, Chief Botanist, Abbott Laboratories, North Chicago. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1953.

This monograph is the best of the books available for the lay reader interested in allergy. The material has been carefully selected and clearly presented. The author has made good use of a wealth of clinical experience in writing this book for the layman. More than two-thirds of the volume is devoted to hay fever, asthma, food allergy, and allergy of the skin. The balance contains special instructions and recipes, a bibliography, a brief appendix that considers the question of vegetable oils as allergens, and a comprehensive index. The style is clear, literate, and concise. There is no attempt at sugar-coating the material with semi-humorous anecdotes or with unusual and frequently bizarre case reports commonly used to maintain reader interest. Interested lay persons will find answers to many questions: the results to be expected from hay fever or asthma therapy; the degree of relief; the possibility of cure; the value and limitations of corticotropin (ACTH), cortisone, and antihistaminics; how to prepare a dust-free room; and how to prepare a palatable restricted diet. In addition to being well written, the book has been ably edited. The physician treating allergies may find it useful to have one or more copies available for circulation among his patients. The more informed such patients are, the more cooperative they will be in adhering to the difficult and prolonged treatment usually required.

Annual Review of Biochemistry. Volume 22. J. Murray Luck, editor, Hubert S. Loring and Gordon Mackinney, associate editors. Cloth. $6. Pp. 729, with illustrations. Annual Reviews, Inc., Stanford, California; H. K. Lewis & Co., Ltd., 136 Gower St., London, W.C.1; Maruzen Co., Ltd., 6, Tori-Nichome Nihonbashi, Tokyo, 1953.

Many reviews contained in the 1953 volume will interest specialists in nutrition. First, there is a chapter by A. G. Hogan of the University of Missouri entitled "Nutrition," which deals with 123 references on the subject of the relationship between maternal health and congenital malformation of offspring. Next is an account in the prefatory chapter by E. V. McCollum of his college training and of his first decade of research in foods and nutrition. Finally, there are chapters on the chemistry and biochemistry of carbohydrates, lipids, amino acids, proteins, nucleic acids, purines, pyrimidines, and vitamins. These chapters were prepared by outstanding men in their fields in England, Israel, Europe, and South America, as well as in the United States. Workers in other fields of medical science will welcome chapters on the biochemistry of enzymes, cortisone, neoplastic tissues, teeth, immunopolysaccharides, antibiotics, and vision. Of lesser interest to physicians are the reviews on nutrition of ruminants and on photosynthesis.

20 Years of Psychoanalysis: A Symposium in Celebration of the Twentieth Anniversary of the Chicago Institute for Psychoanalysis. Edited by Franz Alexander, M.D., and Helen Ross. Cloth. $3.75. Pp. 308. W. W. Norton & Company, Inc., 101 Fifth Ave., New York 3, 1953.

Several distinguished American physicians, educators, social scientists, and psychoanalysts have contributed to this volume celebrating the 20th anniversary of the Chicago Institute of Psychoanalysis. In his introductory review, Dr. Alexander shows how psychoanalysis has moved from its pioneering aggressiveness into a position of recognized responsibility. He cautions psychoanalysts by stating: "It requires that we abandon those defensive attitudes which developed at a time when psychoanalysis was emotionally rejected both by the public and by the academic world. I daresay that these defensive attitudes today are a greater obstacle than the emotional resistance of non-psychoanalysts." Dr. Alan Gregg contributes a stimulating essay, "The Place of Psychoanalysis in Medicine," focusing on the changing concepts of medicine, the changes in the practice of medicine, and how psychoanalysis can relate to these shifts. Dr. Martin Grotjahn considers new trends in psychoanalytic training; Dr. Lawrence Kubie writes on psychoanalysis as a basic science; Dr. I. A. Mirsky discusses psychoanalysis and the biological sciences; and Dr. Talcott Parsons considers psychoanalysis and the social sciences. There are also stimulating and pertinent discussions of each of these papers. Concluding sections describe the research, training, and publications of the Chicago Institute during this period. This volume is an excellent survey of the achievements, the orientation, and the challenges of American psychoanalysis.

Leistungssteigerung: Leistung, Übermüdung, Gesunderhaltung. Von Prof. Dr. Max Hochrein, Chefarzt der medizinischen Klinik Ludwigshafen/Rhein, und Doz. Dr. Irene Hochrein-Schleicher. Third edition. Cloth. 27 marks. Pp. 283, with 53 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart O; [agents for U. S. A., Grune & Stratton, Inc., 381 Fourth Ave., New York 16], 1953.

The problem of increasing the output and efficiency of physical work in man is the subject of this book. The authors state their concept of *Leistung* on page 18 as the work effect that results from the synergism of psychointellectually conditioned drives and organically limited work capacity, two factors that vary widely and independently in each given case. The main body of the book deals largely with the nature and treatment of excessive fatigue and with procedures for improving health and efficiency. The book is valuable mainly as a digest of the references (about 600) listed in the bibliography, which is typographically accurate but incomplete and uncritical. It not only omits important contributions by such investigators as Cureton, Karpovich, Kleitman, and Schneider but also fails to indicate what the authors accept as proof for the assertions they quote from the literature. In a field where motivation is so important, the control of this variable is essential, yet there is little in the book to suggest that the authors appreciate the significance of a contratest or *Gegenversuch*. In the various recommendations for treatment, for instance that on page 235, they make no distinction between pure chemical substances and proprietary mixtures. According to a popular magazine, an American team of weight lifters went to a recent world championship meet in Stockholm with "a large case" of special tablets and powder. They "had vanilla, plain and chocolate flavors, with the plain being used by lifters who had to watch their weight." The temptation to ascribe successes to the use, and failures to the nonuse, of favorite preparations of this sort is irresistible, and the resultant vexing emotional conflicts need to be settled by systematic fact-finding rather than by the continued annotation and exegesis of past impressions and opinions. This book, which makes little headway in the right direction, can be recommended as a source of references for specialists in the field of work-physiology.

Basic Bacteriology: Its Biological and Chemical Background. By Carl Lamanna, Ph.D., Associate Professor of Bacteriology in Johns Hopkins University School of Hygiene and Public Health, Baltimore, and M. Frank Mallette, Ph.D., Associate Professor of Biochemistry in Johns Hopkins University School of Hygiene and Public Health. Cloth. $10. Pp. 677, with 100 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1953.

This is not an average or all-inclusive textbook of bacteriology dealing solely with the taxonomy of bacteria but rather a volume that considers the basic physiological and biochemical properties of micro-organisms. Thus the fundamental physical, chemical, and biological problems of bacteria are stressed constantly to emphasize the principles underlying various bacteriological phenomena. The result is a welcome departure from conventional texts, and many specialized phases of the sciences relating to the life processes of bacteria, are furnished in a clear, lucid style. This text is recommended primarily to students of bacteriology, but it should also prove of interest to general practitioners and interns.

Advances in Pediatrics. Volume VI. Editor: S. Z. Levine. Associate editors: John A. Anderson, et al. Cloth. $7.50. Pp. 323, with illustrations. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11; Interscience Publishers, Ltd., 2a Southampton Row, London, W.C.1, 1953.

This new volume brings together up-to-date authoritative information on seven subjects related to pediatrics. The emphasis in this volume is given to disorders of the newborn. The topics include preventive prenatal pediatrics; pulmonary pathology, hemolytic disease, and intestinal obstruction of the newborn; megaloblastic anemia of infancy; the lipoidoses; and lymphosarcoma in childhood. The detailed discussion of each of the subjects is prepared by a leading authority. Extensive bibliographic references are given. The intention is not to present new material but to sum up the present knowledge in certain fields in which rapid strides have been made in the past few years. The current volume also contains a listing of the subjects covered in each of the preceding volumes. A year-by-year collection of these volumes provides the pediatrician or general practitioner with complete up-to-date information on a variety of important subjects.

Handatlas der Cystoskopie und Urethrocystoskopie. Von Dr. med O. Kneise, a. o. Professor für Urologie an der Martin-Luther Universität Halle, und Dr. med. M. Stolze, Dozent für Urologie an der Martin-Luther-Universität Halle. Third edition. Cloth. 50 marks. Pp. 110, with 127 illustrations. Georg Thieme, Thomaskirchhof 21, Leipzig (10 b) C1, 1953.

This new edition of an atlas first published in 1907 has been enlarged and rearranged. It consists largely of a series of lifelike water colors made of lesions in the bladder and urethra as seen through the cystoscope. As in the previous editions, this atlas has the advantage that the pictures were made by urologists who were also artists. The number of pictures visualizing the urethra and the bladder neck, unfortunately, is limited. The atlas should be helpful to the beginner in the use of the cystoscope and the urethroscope.

QUERIES AND MINOR NOTES

CONGENITAL BLINDNESS

To the Editor:—*A patient wishes information regarding the inheritance of blindness in the event of marriage. He is one of two brothers with congenital glaucoma. There is no other similar history in his family for at least three generations. The girl he intends to marry has congenital cataracts. There is also no similar history in her family.*

J. T. Bergmeyer, M.D., West New York, N. J.

Answer.—The question raised in this instance is a difficult human genetic prognostic problem. The occurrence of a sporadic case, the offspring of assumably normal parents, may result from three major causes: (1) expression of the homozygous state of a recessive gene, (2) a mutation occurring in the germ plasm of one of the two parents, and (3) a phenocopy, the sequela of noxious or infectious intrauterine environmental agents (toxoplasmosis, rubella, and other viruses). A thorough examination of the affected person and his available relatives, a careful pedigree, and meticulous maternal pregnancy history are all requisite before one is qualified to give genetic counsel. Both gene action and intrauterine infectious agents, singly or in combination, may act to effect developmental aberration of the anterior ocular segment and produce congenital glaucoma. A few of the gene-determined anomalies of the anterior chamber effecting congenital glaucoma consist of partial aniridia, hydrophthalmos, Axenfeld's syndrome, cornea plana, and varieties of microcornea. Each of these entities may exhibit different modes of hereditary transmission. Congenital cataracts, and the variety is not mentioned, likewise vary greatly in type and may also be the end-product of different genes or intrauterine environmental action.

With the data at hand, however, the following answer may be made: Both hydrophthalmos and congenital cataract may be genetic or nongenetic in origin. Assuming these entities to be genetic in origin in these two persons, then, because of negative family histories, they must be due to homozygosity (duplex state) of a recessive gene. So hypothecated, hydrophthalmos can occur among the offspring of the proposed marriage—in a ratio of 1 in 4 births—only if the woman with congenital cataracts happens also to be a carrier of the postulated rare recessive gene responsible for hydrophthalmos. Congenital cataract will appear among the offspring—again in the ratio of 1 in 4—only if the man with hydrophthalmos also carries the rare gene for congenital cataract. It is very unlikely that either of these persons is also a heterozygous (single gene state) carrier of the recessive gene responsible for the blindness of the other. It is not to be anticipated, therefore, that for genetic reasons the children of such a marriage will suffer from either of these two entities.

CHILD EATS TOOTHPASTE

To the Editor:—*Is there any toxic effect from the ingestion of chlorhydroxyphenyl (Baxin), which is used as a preservative in ammoniated dentifrices? Would any harm befall a 2-year-old child who ate half a tube of toothpaste containing this substance?* *Norman Bolker, M.D., Nampa, Idaho*

Answer:—According to the manufacturer of dihydroxydichlordiphenylmethane (dichlorophene, G-4, Baxin), the acute oral toxicity of the material is as follows: D_{50} for guinea pigs, 1.25 gm. per kilogram of body weight; LD_{50} for dogs, 2.0 gm. per kilogram. Chronic toxicity studies on rats revealed that a daily intake of about 400 mg. per kilogram for 90 days was without effect detectable on gross or histopathological examination but that an intake of about 1 gm. per kilogram per day for the same period was associated with kidney changes.

The Council on Dental Therapeutics of the American Dental Association has information to the effect that the manufacture and distribution of the only dentifrice known to contain dichlorophene was discontinued in July, 1952. Before that, however, the product contained dichlorophene 0.25%, or 0.2 gm. in an entire 2.7 oz. tube of the paste. This quantity of the material would not be expected to produce serious effects if swallowed by a child weighing 10 kg. (22 lb.). Sensitivity reactions to dichlorophene have been noted in a number of persons and have been reported frequently in the literature (*J. Indiana M. A.* **42**:22-24 (Jan.) 1949; *A. M. A. Arch. Dermat. & Syph.* **64**:640-641 (Nov.) 1951; *New York J. Med.* **52**:1437-1438 (June 1) 1952; *J. A. M. A.* **151**:998-999 (March 21) 1953).

PERSISTENT POSITIVE SEROLOGY

To the Editor:—*A man of 25 with a history of venereal exposure was found to have a strongly positive blood test. He received 300,000 units of penicillin daily for 16 days. Three months later a test was negative. In another six months it was reported strongly positive. A second series of 20 daily injections of penicillin brought a negative report, but again it reverted to moderately positive in six months. A third course of penicillin was followed by a moderately positive report eight months after the last course of penicillin. His wife, whom he married after his first negative report, has a negative reaction now. What should be done?*

M.D., Ohio.

Answer.—A spinal fluid examination including cell count, quantitative protein estimation, quantitatively titered complement fixation test, and colloidal test should be obtained. If this is negative, no further treatment need be given. An indefinite continuation of antisyphilitic treatment wih penicillin, or by any other means, is not indicated for a persistently positive serologic test. Physician and patient should study the article by Moore, "Seroresistance (Wassermann-Fastness) in Syphilis: A Discussion for the Patient" (*Am. J. Syph., Gonor. & Ven. Dis.* **30**:125, 1946). It would be desirable to perform a treponemal immobilization test if facilities are locally available (see The Journal, March 14, 1953, page 962).

TRAUMA TO CHEST AND PNEUMONIA

To the Editor:—*A 9-year-old girl was hit on the left side of the chest by a softball on the school play ground the day before I saw her. The next day the chest over that area was sore. Examination revealed a hematoma over an area of 4 by 4 in. (10.16 by 10.16 cm.). There was no evidence of rib fracture; however, 36 to 48 hours after the injury, a high fever and pneumonia of the left lower lobe, with a leukocyte count of 25,000 per cubic millimeter, developed. The child responded to therapy with crystalline penicillin, and in a few days there was complete resolution of the process. It was my feeling that the trauma possibly precipitated the pneumonic process. The insurance company adjusters felt that trauma such as this, which did not cause rib fractures or penetrating wounds, could not possibly precipitate such a pneumonia. I would appreciate your comments.* *M.D., North Carolina.*

Answer.—From the description of the injury and its cause, there scarcely seem to be any grounds for doubt that it was responsible for the pneumonic condition that developed. Regardless of any bacterial cause, a large variety of pathological changes can take place as a result of nonpenetrating trauma.

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

TRICHOMONAS VAGINALIS

To the Editor:—*I have worried over cases in which Trichomonas vaginalis are found not only in the vagina but also in bladder urine obtained by catheter and once in urine obtained directly from the kidney through a catheter. I have been successful in treating the vaginal type but can do nothing for the bladder and kidney infections. Can you suggest a treatment?* *M. Y. Dabney, M.D., Birmingham, Ala.*

Answer.—The role of Trichomonas vaginalis as an etiological agent in irritative infection of the vagina and urethra is very poorly understood. The organism is often found in persons who show no tissue reaction and who have no symptoms suggestive of an irritative factor. This is oftener true when it is found in the urine from the urethra or bladder than when it is found in vaginal smears. Some observers have felt that the Trichomonas organism in itself is nonpathogenic but that its action gives a specific Streptococcus a chance to become virulently active and to cause the inflammatory reaction. Trichomonas organisms are frequently seen in the prostatic strippings of a man who has no evidence of prostatic irritation or urethritis. Again, there is no question but that in other patients the Trichomonas infection has apparently been the cause of a marked irritation of the mucous membrane.

The original treatment of Trichomonas vaginalis infection of the urethra was irrigation with acriflavine, 1:1,000. Since that time, many other medicaments have been suggested. Some urologists have used silver nitrate in strengths from 0.1% up to 1% for topical application. Others have used merbromin (Mercurochrome) or thimerosal (Merthiolate) and mercurial derivatives. The best method of treatment of the urethra and bladder, if there is a direct connection, is to clear up the vaginitis. This is done by the usual prescribed methods, using a suppository for vaginal insertions twice daily and a daily thorough douche with an acid medium, the most available being a tablespoonful of vinegar to a quart of warm water. As is well known, Trichomonas vaginalis infection is a persistent disease, and it may be necessary to treat the large intestine with oxytetracycline (Terramycin), chlortetracycline (Aureomycin), or arsenical derivatives in order to destroy the focus of the organism.

ABSENCE OF SECONDARY SEX CHARACTERISTICS

To the Editor:—*What therapy should be given a 13-year-old girl who is physically small for her age and has shown no evidence of development of secondary sex characteristics. She is slim and somewhat shy but otherwise alert and of above normal intelligence. Could there be an agenesis of ovaries or hypo-ovarianism and how would these conditions be ruled out by laboratory methods? Would you advise estrogen and/or chorionic gonadotropin therapy for stimulating development of secondary sex characteristics? The parents are of average size and an older daughter is well developed and experienced the menarche at age 12.*

M.D., New York.

Answer.—A definite diagnosis is difficult in a girl of 13 years of age, as several conditions must be considered. She may have a retarded puberty without any abnormal endocrine function. Naturally, it will require a year or two to verify this situation. Other possibilities must be considered, however, such as ovarian agenesis in which there is a failure to grow properly associated with a lack of ovarian function. In these cases, pubic and axillary hair are usually present. Laboratory studies usually reveal an excess of gonadotropic hormone. If her growth has been stabilized for some time, this evidence would be considered indicative of dwarfism associated with ovarian agenesis. Another condition to be considered is a pituitary dysfunction in which there is a deficiency of the gonadotropic as well as the growth hormone from this organ. Although the diagnosis may be difficult in such cases, roentgenograms of the skull may be of value and perhaps a bone age study. There is usually an absence of gonadotropic hormone excretion. Treatment is not too satisfactory. The administration of estrogenic hormones may cause the secondary sex characteristics to develop, but the organs recede in size as soon as medication is discontinued. However, there may be some psychological value in this treatment.

DISCOID LUPUS ERYTHEMATOSUS

To the Editor:—*I have been treating a patient with discoid lupus erythematosus with quinacrine (Atabrine), for four months. The lesions have almost cleared, but I fear the development of some serious toxic state. Blood cell counts have been made without the discovery of any aplastic anemia or leukopenia. The patient has lost 6 lb. (2.7 kg.) in four months. Some diarrhea and vomiting have occurred. The highest dosage was 150 mg. daily, which was reached after two and one-half months. The dosage is now being slowly reduced in an effort to secure a small maintenance dose if possible.*

George M. Kesl, M.D., Port Huron, Mich.

Answer.—It would be inadvisable to alter the scheme of treatment in this instance. The lesions are almost cleared, there is no evidence of serious reaction, and the dosage is now being reduced to determine an effective minimum maintenance level. A better regimen than that has not yet been developed.

TOXICITY OF HYDROGEN SULFIDE GAS

To the Editor:—*Do hydrogen sulfide fumes have any effect on human lung tissue? A stream is highly polluted by organic waste from a large malting plant, and this gives off very offensive hydrogen sulfide fumes. At one time the fumes were so concentrated that they turned the lead in white paint on a home to a brown lead sulfate precipitate.*

M.D., Wisconsin.

Answer.—Hydrogen sulfide gas is exquisitely toxic, the upper limit of safety for extended exposure being not higher than 20 parts per million. Any available text dealing with occupational diseases or industrial hygiene will discuss this chemical. Hydrogen sulfide is both an asphyxiant and an irritant. When exposure is high, death may be brought about within a few minutes from central nervous system damage, and at autopsy, no tissue injury may be demonstrated. At the lowest level of damage eye irritation appears, and possibly this gas exercises selective action on ocular tissues. While lung involvement is not the rule, bronchitis and chemical bronchopneumonia have been clearly shown to have resulted. The offensive odor of hydrogen sulfide is no guide to prospective damage. Significant concentration quickly impairs odor perception so that the possibility is that so long as the odor may be detected, harmful concentration does not exist. White lead coatings readily are turned black because of the formation of lead sulfide, but this may be accomplished at such low levels that this coloration does not necessarily prove that bodily damage will appear.

TOEING IN AND TOEING OUT

To the Editor:—*I am often consulted about toeing in, toeing out, slight bowing in the legs, and knock-knees in children between 1 and 3 years old. Are there criteria that can determine what is and what is not within normal limits? When there is no actual deformity, to what extent is wedging of the shoe useful? Where are the heel and toe wedges placed? I have always recommended low shoes. Is this good doctrine?*

Frederic Speer, M.D., Kansas City, Kan.

Answer.—Toeing in may be due to (1) inward twisting of the tibia; (2) contracture of the internal rotators of the hip; (3) a change in the relation of the neck of the femur to the shaft; (4) contracted posterior tibial muscles; and (5) metatarsus varus. Toeing out may be due to (1) weak ankles and pronated feet; (2) loss of passive dorsiflexion of the foot when the knee is extended; (3) outward twisting of the tibia; (4) contractures of the soft parts about the hip; or (5) malalignment of the neck of the femur on the shaft.

In pronated feet, a lift should be placed under the heel, 1/8 to 1/4 in. (0.32 to 0.64 cm.) thick on the inner side and a similar toe wedge on the inner side just under the great toe joint. With short heel cords, the heel of the shoe must be raised. When children who have toeing out are asked to stand on tiptoe, with short heel cords the foot goes into the corrected position. In metatarsus varus, the shoes should be worn on the wrong feet, that is the right shoe on the left and vice versa. In such cases, the wedges should be put on the inner side of the heel and sole so that, when the shoes are worn on the wrong feet, these wedges will be on the outer side. For the other conditions mentioned, the mother should be taught to give stretching exercises. Finally, inward twisting of the tibia will usually straighten out by itself.

CLEARING FACTOR IN PLASMA AFTER HEPARIN INJECTION

To the Editor:—*I read in a magazine that the National Heart Institute Group has discovered a "clearing factor" that serves in clarifying the blood of cloudiness after ingestion of a fatty meal. In other words this remedy is supposed to prevent accumulation of fatty substances in lining of arteries and thus help to prevent atherosclerosis. The remedy is supposed to consist of heparin and an enzyme extracted from animal stomach mucosa. Is this preparation of value? Is it obtainable and if so under what name and where?*

J. W. DeMand, M.D., Lincolnville, Kan.

Answer.—The studies mentioned by William Laurence in his article in *Look Magazine* are a portion of a general research program on the etiology of atherosclerosis. The "clearing factor" referred to is an enzyme in plasma that appears on intravenous heparin injection. Clearing factor activity also appears when animals are exposed to certain circumstances (e. g., peptone shock) that are known to release heparin into the circulation. The enzyme can also be produced in vitro by incubation of a precursor protein, present in plasma, with heparin in the presence of a tissue enzyme found in great abundance in pyloric mucosa. It can clarify lipemic plasma by catalyzing the splitting of neutral fat with the production of free fatty acids and glycerol. This splitting requires the simultaneous presence of serum albumin and a second material tentatively called "coprotein."

The over-all studies are still at the experimental stage and derive their clinical interest from the fact that the system will also attack the low-density lipoproteins earlier suggested as a possible etiological factor in atherogenesis. The clinical evaluation of the clearing factor system is under active investigation at the present time, but has not as yet led to any definitive therapeutically useful findings.

POSTOPERATIVE MENOPAUSE

To the Editor:—*Periodically a 30-year-old woman who had a hysterosalpingo-oophorectomy two years ago suffers from headaches, dizziness, nausea, nervousness, and depression associated with a rapid gain of weight and bloating. Although the severity and frequency of the occurrence of this group of symptoms are diminishing, they are disagreeable at times. There has been no history or indication of malignancy, and there are no mammary symptoms. What treatment will prevent or minimize these symptoms? Once the symptoms have developed, would estrogens aggravate or relieve the symptoms? What effect would the injection of an androgenic preparation have?*

C. L. Attaway, M.D., Ville Platte, La.

Answer.—This patient is typical of a rather large group of patients, and her symptoms are most probably menopausal. Estrogens often give partial or total relief. Most patients who have had surgical extirpation of all female pelvic organs do not have many symptoms after about two years. It is true the younger patients may have a harder time, especially if they are under stress. Most of these patients need little or no estrogen therapy. Sometimes giving estrogens intermittently prolongs the symptoms. Many of these patients have a combination of physical and psychic or emotional difficulties. Many are overweight, frustrated, and unhappy in their work or homes, and many are on poorly regulated diets. They should be examined carefully and closely questioned, allowing plenty of time for them to talk, relax, and "air" their problems. Then they should be put on well-balanced, high protein diets, which should also be designed for weight reduction if indicated. This often relieves the nausea and flatulence. Many of these women do well with administration of a little thyroid extract, depending on their thyroid function. A mild sedative such as phenobarbital in 1/4 or 1/2 grain (15 or 30 mg.) doses may be prescribed, and the patient is told to keep them in the medicine cabinet in case she gets upset or cannot sleep. It is remarkable how many patients take none or very few of them. They are specifically instructed to eat three regular meals a day with no "piecing" in between. Adequate water intake is suggested for proper bowel regulation. Warm baths are suggested for relaxation, especially before retiring. Exercise, in the form of long walks, is advised, and hobbies are not only suggested but insisted on. These women should avoid situations that tend to make their symptoms worse. Lying down for a few minutes in the morning and afternoon tends to relax them. Usually by the time these routines are well established, the patient will "break down" and tell the physician the "real trouble"—her husband, her children, her boss, her co-worker—and often little suggestions correct the difficulty. In spite of the fact that most of the symptoms seem to be emotional, these patients should be observed often enough to make sure that no organic problem such as cholecystitis, gastric or bowel ulcer, or carcinoma exists. Much misunderstanding still exists concerning what happens following the removal of female pelvic organs, and before operation it should be explained to the patient so she will know what to expect. If the depression is severe and the above management fails to help, psychiatric care is suggested. Androgens are not superior to estrogens in therapy, and they often lead to masculinizing signs or symptoms.

CANCER OF BREAST

To the Editor:—*What is the present belief regarding the effectiveness of postoperative radiation therapy of carcinoma of breast in prevention of recurrence.*

P. W. Van Metre, M.D., Rockwell City, Iowa.

Answer.—The effectiveness of postoperative radiation therapy in the treatment of cancer of the breast is difficult to evaluate. Some studies indicate it is not of great value, while others claim from 5 to 15% improvement of five year survival figures by its use. Most surgeons employ it when the pathologist reports metastases to axillary nodes.

ANENCEPHALIC MONSTERS

To the Editor:—*In regard to the question of anencephalic monsters in Queries and Minor Notes in* The Journal, *Oct. 10, 1953, page 606, I am appending some of the published articles relating to the incidence of anencephaly. There appears to be a real difference in the incidence of this malformation in various countries.*

With respect to the question of how many pregnancies with anencephalic monsters go to term, data of MacMahon and McKeown (Brit. J. Social Med. *6:265, 1952) are pertinent. They reported that in a series of 473 such monsters, gestation was less than 33 weeks in 139 (29%), from 33 to 37 weeks in 193 (41%), and over 38 weeks in 141 (30%).*

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RECENT ADVANCES IN OBSTETRIC ANALGESIA

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The principles that govern good obstetric analgesic practice are the provision of pain relief for the expectant mother, the prevention of maternal complications, and the protection of the newborn from respiratory and circulatory depression. In the United States, more than 100,000 fatalities per year occur on the day of birth and the estimated incidence of sequelae is even greater. It is felt that a decrease of mortality and morbidity might be effected by a better understanding of the recently available pharmacological tools and the exercise of greater precision in their use.

The method of analgesia that is most popular at the present time is the use of the short-acting barbiturates, such as pentobarbital (Nembutal) or secobarbital (Seconal) in the dose of ¾ to 1½ grains (50 to 100 mg.) early in labor to allay anxiety and apprehension. During the active phase of labor, meperidine (Demerol) hydrochloride (50 to 100 mg.), prisilidene (Nisentil) hydrochloride (60 mg.), combined with scopolamine hydrobromide, 1/150 grain (0.4 mg.), is injected.[1] During labor these drugs are reinjected in three or four hours if necessary. It should be emphasized that, with the exception of scopolamine, these drugs produce a fair degree of neonatal respiratory depression. Consequently, this favorite method of producing analgesia falls short of our obstetric analgesic ideal.

The recent trend to furnish safe, adequate relief of obstetric pain for the mother, free of depressant effects in the infant, is exemplified by the following methods: conduction analgesia, intermittent inhalation of an analgesic agent, the administration of analgesics that are devoid of respiratory depressant effect, and the use of a new drug that reverses the respiratory and circulatory depressant effects of the opiates.

The patients under observation in the studies reported here were checked every 15 minutes for changes in pulse rate, blood pressure, and respiratory rate. The degree of analgesia and of hypnosis was classified as mild effect 1+, moderate effect 2+, and intense effect 3+ or 4+. The obstetric progress of the patient was ascertained frequently. A newborn infant who remained apneic after thorough suctioning of the nasopharynx was arbitrarily considered to have depressed respiration. The apneic infants in these studies responded favorably to intermittent positive pressure oxygen therapy.

CONDUCTION ANALGESIA

The conduction method of pain relief has gained wide popularity during the past decade.[2] Techniques of saddle block and caudal anesthesia have been adequately described.[3] When properly performed, the sacral roots are anesthetized and a level of hypesthesia develops up to the 10th thoracic segment. Fundal contractions continue that are devoid of pain. The anesthesia is induced in the primiparous patient after the cervix is dilated 7 cm. and the head is engaged. The multiparous patient is anesthetized after the onset of active labor, when the cervix is dilating and when no problem of cephalopelvic disproportion is presented. Unless the anesthesia is complicated by drug idiosyncrasy or a severe drop in blood pressure, these methods provide relief from the pains of labor without respiratory depression in the newborn.

The advantages to the infant must be judged in the light of the risks to the mother, such as potential postanesthesia neurological sequelae and possible fatalities due to massive spinal anesthesia attributable to faulty caudal technique. These considerations limit this method of pain relief to specific indications. Therefore, these procedures have been reserved for patients with cardiac, pulmonary, liver or kidney diseases, for eclamptic or preeclamptic states, and for premature or multiple deliveries. In cases of abruptio placenta or placenta previa, conduction anesthesia is not recommended, since it produces vasodilatation in the anesthetized area and may therefore increase hemorrhage at the placental site. The usually accepted contraindications to conduction anesthesia are infection of the skin or subcutaneous tissue of the area to be injected, vertebral bone disease or deformity, diseases of the central nervous system, anemia, shock, and impending shock states.

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INTERMITTENT ANALGESIA

The self-administration of volatile anesthetic agents has been utilized in the past to alleviate the pain of labor. This method of analgesia has been accorded greater acceptance since the advent of trichloroethylene (Trilene). This agent is inhaled intermittently and acts as a potent analgesic.[4] The patient is instructed to start her inhalation at the very onset or even in anticipation of each contraction in order that an adequate concentration of the anesthetic may be absorbed and circulated to the cortex, thereby producing its optimal effect. Since the drug is not inhaled in the interval between each contraction, the anesthetic content of the blood diminishes. Since the trichloroethylene inhalation is discontinued prior to delivery, newborn respiration is unaffected and there is spontaneous breathing. The maternal complications that occasionally occur are tachypnea, hypotension, extrasystoles, or bradycardia. The presence of these untoward effects usually prohibits the further use of the drug.

In 1951, Gordon and Morton reported adequate analgesia in 90.7% of their patients who received the trichloroethylene by inhalation.[4a] In our series of 55 patients, about 50% had marked relief of pain and a mild to moderate effect was observed in the remainder. A large proportion of our patients are extremely tense and uncooperative, which may account for our less favorable results. No respiratory depression in the newborn occurred unless the patient received medication in addition to the trichloroethylene analgesia.

ANALGESIA WITHOUT RESPIRATORY DEPRESSION

There has been ascribed to several drugs the property of good analgesia without respiratory depression. The following agents were given a trial.

Intravenous Use of Local Anesthetics.—Two grams of either procaine hydrochloride or lidocaine (Xylocaine) hydrochloride was dissolved in 1 liter of 5% dextrose in water to prepare a 0.2% solution of these drugs.[5] After the patient was given 1½ grains (0.1 gm.) of pentobarbital rectally or parenterally, either the procaine or lidocaine solutions were administered intravenously and set to flow at a rate of 80 to 100 drops per minute. The study was extended to five patients for each drug. Although hypnosis occurred in the lidocaine group, slight or negligible pain relief resulted from use of either preparation. Toxic reactions such as twitchings and nausea were seen in both series.

Alcohol in Dextrose Solution.—Several investigators have reported satisfactory results in labor patients with the intravenous use of alcohol in 5% dextrose in water with 5 or 7% alcohol concentrations.[6] Our routine was to set up the apparatus for intravenous administration of 1 liter of 5% alcohol in 5% dextrose solution. From 200 to 800 cc. of this solution was administered rapidly until a sedative effect or some relief of pain was noted. The rate of flow of the solution was then adjusted so that the patient received 200 cc. of this fluid in each succeeding hour. Of 48 patients subjected to this routine, 12 were completely relieved of their pains for the entire labor period, but the remainder required additional analgesia. Neonatal respiratory depression was not evident in the group that received only the alcohol medication.

Antihistaminic Drugs.—Antihistaminic drug medication is complicated by the side-effects of hypnosis and sedation. A study was undertaken to explore the extent of this hypnotic and analgesic effect. Two well-known antihistaminics, diphenhydramine (Benadryl) hydrochloride and chlorporphenpyridamine (Chlor-Trimeton) maleate were utilized in two groups of 30 patients each. These drugs were injected intravenously in fractional quantities until eventually massive dosages were attained. Moderate analgesia was achieved in 35 to 40% of the patients. The dose range for diphenhydramine hydrochloride was 80 to 120 mg. and for chlorprophenpyridamine maleate 10 to 20 mg. More intense analgesia resulted with diphenhydramine. The untoward effects occasionally observed with either preparation were nausea, vomiting, and hypotension. Newborn respiration was not depressed by either drug.

Combination of Alcohol and Dextrose Solution with Diphenhydramine.—An intravenous infusion of 5% alcohol in 5% dextrose in water was given to each one of the labor patients in this group according to the routine previously described. Twenty milligram fractions of the diphenhydramine hydrochloride were injected into the infusion tubing every 10 minutes until the pains were relieved. The parturients in this group received a total of 800 to 2,000 cc. of the alcohol solution and 40 to 120 mg. of the diphenhydramine hydrochloride. Fifty-five patients received this combination. A high degree of comfort was provided for 46 patients (83.6%). All the infants in this group breathed spontaneously.

REVERSAL OF RESPIRATORY DEPRESSION

Experimental and clinical reports have revealed the value of nalorphine (Nalline) in reversing the respiratory and circulatory depressant effects of morphine, opium alkaloids (Pantopon), dihydromorphinone (Dilaudid), methadone, and meperidine.[7] Huggins denies that nalorphine has an antagonistic effect on meperidine.[7d] Eckenhoff, Hoffman, and Dripps demonstrated the value of nalorphine in obstetric patients. The various opiates as well as meperidine were given to a large series of expectant mothers. A significantly decreased incidence of newborn respiratory depression was observed in the patients who were given nalorphine prophylactically prior to delivery as compared to the control groups.[7f]

In order to take advantage of the superior analgesic quality of morphine as well as the reversal action of nalorphine on respiratory and circulatory depression, we investigated the effects of a mixture of morphine and nalorphine on labor patients. It was found that 10 to 15 mg. of nalorphine maximally offsets the respiratory and circulatory depressant effects of 15 mg. of morphine sulfate when these drugs were combined. Equal doses of morphine and nalorphine were mixed and administered by fractional intravenous injection to 75 patients in active labor. The dose ranged from 5 to 40 mg. of each drug, with an average of 15.8 mg. Intense hypnosis and analgesia resulted, and the effect lasted from 50 to 505 minutes (average 192 minutes). The effect on respiratory rate, blood pressure, and pulse rate was negligible. The labor was considered to have progressed at a normal rate. Except for respiratory depression in one infant, all breathed and cried spontaneously. The infant with depression was the firstborn of twins; it was apneic at birth but was rapidly resuscitated with intermittent positive pressure oxygen therapy. The second twin was delivered by version and breech extraction and cried spontaneously.

The majority of the patients in the foregoing studies were delivered under regional anesthesia. When this method was not feasible, light (first plane) cyclopropane anesthesia was administered to the mothers. Deep (third plane) ether anesthesia was utilized on only one occasion for the delivery of the previously mentioned second twin.

COMMENT

Causes other than the analgesia administered play a role in the production of neonatal depression. The obstetric and anesthetic factors must be considered in each case as well. Studies on analgesia are preferably accompanied by a control series, but at present no method of measuring pain relief is widely accepted. Similarly no uniform standard for assessing newborn respiratory depression is utilized by any large group of clinics. Some of the methods currently in use measure the newborn apneic period from the birth of the toe or head to the first spontaneous breath or cry. However, the objection to these criteria lies in the fact that the infant may breathe or cry spontaneously and then suddenly become apneic and show marked depression. It is felt that a proper classification of newborn depression should provide for the frequent assessment of the respiratory and circulatory status of the infant during the initial 24 hour period.

This study was undertaken in an endeavor to evaluate the most promising recent advances in the field of obstetric analgesia. Each method was individually assessed on its own merits. Certain procedures were original and others were modified in order to gain additional benefits. It is felt that the risk inherent in caudal and saddle block anesthesia should limit these techniques to the specific indications that have been outlined. Trichloroethylene supplies the best result in terms of a placid and cooperative patient. A high degree of durable pain relief was observed in two groups: (1) the patients who received the intravenous infusion of 5% alcohol in 5% dextrose in water combined with the fractional injections of diphenhydramine hydrochloride. and (2) the mothers who received the mixture containing morphine and nalorphine. It is understood that these latter studies are still in the exploratory stage, and further investigation is necessary.

These studies to date consist of small numbers of patients in most of the series presented, and, therefore, conclusions of statistical significance cannot be reached. However, the emphatic point of this paper is the desire to present for consideration effective obstetric analgesic agents that produce only minimal or negligible respiratory depression of the newborn.

SUMMARY

A critical review of recent trends in obstetric analgesics is presented. In general, the obstetric analgesic ideal of safe, maternal relief of pain without newborn respiratory depression is best achieved with one of the following methods: conduction analgesia, caudal and saddle block, administration of trichloroethylene (Trilene) by inhaler, intravenous infusions of alcohol combined with fractional intravenous injection of antihistaminic agents such as diphenhydramine (Benadryl) hydrochloride or chlorprophenpyridamine (Chlor-Trimeton) maleate, and the parenteral administration of a mixture of morphine and nalorphine (Nalline).

THE LOW SODIUM SYNDROMES OF SURGERY

AN OUTLINE FOR PRACTICAL MANAGEMENT

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An acute lowering of the plasma sodium concentration is always a sign of trouble in patients who have undergone surgery. Even in instances in which the plasma sodium concentration has been lowered to levels between 130 and 135 mEq. per liter for many months by dietary restrictions or visceral disease, the situation bodes ill if trauma is then superimposed. The clinical picture that accompanies a low serum sodium level in patients undergoing surgery consists primarily of weakness, anorexia, and lethargy. The patient may be disoriented or comatose, his reflexes are sluggish and his responses slow. Urine formation is usually very slow, gastrointestinal function is poor, some edema may be present, and the patient looks "washed out." If the patient is in the postoperative period, convalescence may seem to have ceased its dynamic daily progression and appear "stalled." If acute trauma is superimposed, blood pressure is poorly maintained. This picture is not pathognomonic. The plasma sodium concentration cannot be estimated from clinical appearances.

I have seen patients regain their normal health, strength, vigor, and plasma tonicity simply by taking adequate calories and food. This point is emphasized here only to introduce the concept that a low serum sodium level means a sick patient, but one must treat the patient not the serum sodium deficiency alone.

NORMAL SODIUM METABOLISM AND DISTRIBUTION

One milliequivalent of sodium weighs 23 mg. There is about 2,700 to 3,000 mEq. of sodium in a normal 156 lb. (70 kg.) male, about 1,800 to 2,000 mEq. of which is in the extracellular phase. Here it resides at a normal concentration of 138 to 143 mEq. per liter. This concentration is found throughout the extracellular phase including the plasma. Although there are slight

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differences between the extravascular and intravascular sodium concentration owing to the Gibbs-Donnen effect, these are generally very small and should not enter into clinical thinking. A shift of sodium from intravascular to interstitial compartments would not of itself change the concentrations; it would merely move water. Next, there is a small fraction of body sodium in cells. The great mass of body cells are those of striated muscle, which constitutes 78 to 85% of the lean body mass. The concentration of sodium within these cells is not known accurately, but it may be in the region of 5 to 7.5 mEq. per kilogram of intracellular water. Finally, there is a very large amount of sodium in the skeleton. This sodium may amount to as much as 1,000 mEq. in a big-boned person. The sodium of the skeleton may be thought of as comprising three distinct fractions. First, there is that which exists in association with chloride and that is probably in the extracellular fluid phase of bone. This amount of sodium is small, amounting to from 25 to 30 mEq. per kilogram of wet bone. Secondly, there is that portion of sodium that exists over and beyond chloride, the "excess sodium," of which one-half is readily exchangeable with sodium elsewhere in the body. This second fraction we refer to as the "exchangeable bone sodium." The third fraction of bone sodium is that which exists over and beyond chloride but that is not exchangeable with atomic sodium. This sodium is fixed in some sort of an insoluble, inorganic complex. We refer to this as the "unexchangeable bone sodium." All of the "excess sodium" in bone, both exchangeable and unexchangeable, probably exists in some phase of the inorganic structure of bone associated with the crystal lattice of calcium phosphate complexes. The total amount is large, about 200 mEq. per kilogram of wet bone. Recent knowledge indicates that this bone sodium may be of considerable importance in metabolic emergencies.

The normal daily sodium diet is approximately 100 mEq. A person who likes a great deal of salt on his food may be found to be eating 175 to 200 mEq. per day of sodium. In a normal person who is in zero balance, neither gaining nor losing weight, the excretion is of course equal to the intake. This excretion is predominantly urinary and will therefore total about 100 mEq. per day, depending on the diet. A person on a low sodium diet will take in 20 to 30 mEq. per day, and, if his kidneys are normal, this person may also be in zero balance. In normal persons a low sodium diet will not readily lower the plasma sodium concentration, because sodium-conserving mechanisms are quite efficient. When there is heart disease, liver disease, or kidney disease and a tendency to water retention, however, a low sodium diet may be associated with a low serum sodium concentration.

Isotonic sodium chloride solution contains 146 to 155 mEq. per liter, depending on whether it is 0.85 or 0.9% sodium chloride. Blood bank whole blood contains, in the plasma fraction, about 145 mEq. per liter of sodium. In the plasma, protein exists at a concentration of about 6.5 gm. per 100 cc. There is a total of about 250 gm. in the plasma of a man. In the extracellular, extravascular phase, the "interstitial space," protein is found at a variety of concentrations ranging from as high as 5 gm. per 100 cc. in liver lymph on down to a fraction of 1% in peripheral lymph. It is possible to make a very crude estimate of the amount of solute, "plasma," protein in the extravascular, extracellular phase (about 150 gm.). One can then derive a sodium-protein ratio for the entire extracellular phase. This ratio is 2,000 mEq. of sodium for 400 gm. of protein, or 5 mEq. of sodium per gram of solute, "plasma," protein. When this ratio is distorted in the direction of too much sodium, the protein concentration will inevitably fall, regardless of other factors; hence the importance of the concept.

Endocrine forces bearing on sodium metabolism are complex and beyond the scope of this article. It should be pointed out, however, that the hormones of the adrenal cortex have the net effect of decreasing urine sodium concentration by sodium resorption in the renal tubules. They tend to raise plasma sodium concentrations by this and other mechanisms. Desoxycorticosterone acetate (DOCA) is an artificial substance not normally found in the adrenal gland, but it resembles adrenal steroids and has a remarkably strong sodium-conserving effect on the renal tubules.

The pituitary antidiuretic hormone has an interesting effect with respect to sodium. It tends to promote sodium excretion from the kidney to a moderate extent. It tends to favor water resorption from the distal tubule to a very marked extent. The net result is that prolonged intense antidiuretic activity, especially if accompanied by water administration, results in a marked lowering of sodium concentration in the serum and a slight lowering of total body sodium. Thus we find that the anterior pituitary, through its stimulating effects on the adrenals, and the posterior pituitary, are directly antagonistic as regards their effect on both body sodium and serum sodium concentration. This is another example of homeostatic "balance" between opposite endocrine forces, forces that in this instance reside in two parts of the same gland. All of these metabolic and endocrine factors are of importance in the care of patients undergoing surgery.

BASIC TYPES OF LOW SERUM SODIUM SYNDROME IN SURGERY

There are three basic types of low serum sodium seen in patients who have undergone surgery. Mixtures, of course, occur. It is most profitable, however, to discuss the three types distinctly.

Normal Body Sodium and Body Water with a Low Serum Sodium Concentration.—The "sodium paradox" is the term applied to normal body sodium and body water with a low serum sodium concentration. It is found in normal persons who are severely injured. It is found after major surgery. In these instances there may be no loss of sodium from the body. In fact, there may be some gain. The change in body water may be zero or even a slight decrease. But, despite these various factors, which one might predict would hold the serum sodium concentration at normal or slightly elevated, the serum sodium is paradoxically seen to drop.

Normal Body Sodium but Too Much Water with a Low Serum Sodium Concentration.—"Water intoxication," or sodium dilution, applies to a condition of normal body sodium but too much water with a low serum sodium concentration. It is most characteristically found when too much water has been administered in the presence of an antidiuretic effect. This is characteristic of persons with heart disease, liver disease, or kidney disease. It is found after injury or major surgery when too much sodium-free water has been given.

Low Body Sodium with Low or Normal Body Water.—A true "sodium deficiency" occurs when there is low body sodium with low body water. When the sodium loss is in excess of water a low serum sodium concentration is produced. This is the situation classically referred to as "dehydration." It is important to emphasize that, in the two other disorders mentioned above, dehydration does not exist. We therefore reemphasize that the surgeon should not diagnose "dehydration" on the basis of a low serum sodium concentration and most definitely should not treat the patient for dehydration unless it actually exists. Sodium deficiency usually occurs because of gastrointestinal, or other extrarenal, losses. In certain special instances, loss may occur in the urine as a result of renal or adrenal disease. A test dose of desoxycorticosterone acetate is useful in differentiating the organ at fault when sodium deficiency results from urinary loss (see below).

THE APPROACH TO THE PATIENT

History and physical examination are of overriding importance. The following information should be particularly sought: 1. What is the patient's normal weight and recent weight curve? Is he gaining or losing weight? 2. Has he been subjected to trauma? If so, is he losing weight as he should? 3. Is there edema? 4. What is the recent intake-output water balance? Is he dehydrated? 5. What is the urine output? 6. Is the patient eating or starving? 7. Is there visceral disease such as heart failure, liver failure, terminal cancer, or kidney disease? When these questions have been answered, laboratory work can be undertaken. It need not be complex, but certain determinations are essential to intelligent management. The following questions should be answered: 1. What is the patient's colloid osmotic pressure and oxygen-carrying capacity? This may be measured by serum protein concentration and hematocrit. 2. What is the patient's acid-base balance? The physician should check carbon dioxide combining power, chloride concentration, or pH. 3. What extrarenal losses are taking place? This may be determined by analysis of vomitus, tube drainage, and fistula output for sodium, chloride, and potassium. 4. What influences are bearing on the cell itself? Plasma potassium concentration should be determined. 5. Are the kidneys doing their normal job of saving sodium and excreting nitrogen? The urine sodium concentration and blood urea nitrogen should be checked. The last determination, namely that of urine sodium concentration, is probably the most important single determination in carrying forward with treatment of these syndromes, as will be mentioned below.

CLINICAL CLASSIFICATION AND TREATMENT

Sodium Paradox.—The patient who is suffering from "sodium paradox" has a low serum sodium level; he has had an operation or received an injury and is losing weight normally, with no unusual renal or extrarenal loss and no chronic disease. A plasma sodium level as low as 125 mEq. per liter is compatible with this disorder. Notice that the patient has recently had a trauma. By "recently" is meant within the last week. He is losing weight quite normally, this weight loss being the result of negative nitrogen balance and fat oxidation. Weight losses in a normal-sized adult soon after massive trauma should run in the region of 300 to 500 gm. per day. A less rapid weight loss than this in a man suggests some degree of water retention. Women do not react quite so strongly to trauma and may not lose weight quite so rapidly, but the patient should be losing weight normally after injury until normal diet is again resumed.

Notice that there is no unusual renal loss. This is established by the finding of low urinary sodium concentrations that, with a low serum sodium concentration and after trauma, should be less than 25 mEq. per liter. This analysis should be based on a specimen representing at least a six hour collection when no sodium is being given intravenously. If sodium is being given intravenously, there will always be some "spill" in the urine, and this of course would be misleading in differential diagnosis by urine sodium concentration. As an associated finding, the plasma potassium concentration may be elevated. This may not be immediately evident, since concentrations in the range of 4.7 to 5.2 mEq. per liter are not regarded as particularly abnormal. Yet, if serial determinations are made, it will often be found that in this poststress electrolyte "shift" there is a jump in plasma potassium concentration during the time when there is a dip in serum sodium. Under exceptional circumstances, this rise in plasma potassium level may achieve toxic dimensions, particularly if the stress has been remarkably severe or if the kidneys have been directly injured, either by trauma or by ischemia. The treatment here is centered on the recognition of the situation. The physician should wait, and take care of the patient as an early convalescent after injury. The patient should be mobilized and just as soon as his gastrointestinal tract will accept it, he should be given food. He should not be drowned with salt and water infusions. He should not be considered dehydrated unless there is conclusive evidence. Close attention should be paid to the blood volume, colloid osmotic pressure, and oxygen carrying capacity. The body water should be maintained by balancing insensible losses accurately. The weight should be checked daily. He should never gain weight rapidly or lose weight rapidly soon after trauma; instead, he should have a gradual decline in weight until such time as his oral caloric intake is again resumed. It is reasonable to give a moderate amount, up to 100 mEq., of sodium intravenously the first day that the syndrome is recognized. If a toxic concentration of plasma potassium coexists with this low sodium level, it is wise to give 300 cc. of 3% sodium chloride solution, this being approximately 175 mEq. of sodium. This should be done the first day only, and after that losses should be delicately balanced and no excess sodium given. This sodium is given solely to balance a high plasma potassium level; sodium is an antidote in potassium toxicity. The characteristic course is that of gradual recovery of serum electrolyte to normal levels as convalescence progresses.

Water Intoxication or Sodium Dilution.—The patient who is suffering from "water intoxication," or "sodium dilution," has a low serum sodium level, is chronically depleted, and may have heart disease, liver disease, or an advanced form of cancer. He may have a severe burn, or he may have been injured recently. He is undernourished and anemic. He is not losing weight normally as he should be if he has been injured, and he may be gaining weight. The water balance is positive, there is no renal or extrarenal loss of sodium, and edema may be present. It should be noted that the emphasis is on depletion, undernourishment, cachexia, and chronic disease. This situation may exist previous to trauma, in which case trauma will accentuate the dilution of normal plasma electrolyte. The precarious situation may not have been recognized prior to the operation, in which case it is often picked up postoperatively when the patient is "not doing well." Notice that the patient may be gaining weight. This can be ascertained only if serial body weight determinations are made. If a patient has been severely injured or has had an extensive operation and is maintaining a steady weight, this is the equivalent of weight gain in the untraumatized state, since the patient should normally be losing weight by mobilization of fat and lean tissue.

Associated findings often include some degree of azotemia. Such patients often show elevations of blood urea nitrogen in the region of 35 to 70 mg. per 100 cc. A low hematocrit and serum protein concentration are evidences of both anemia and extensive water intoxication. Notice that there is no renal loss of sodium; the urine sodium concentration here is low. There is no extrarenal loss of sodium. This particular situation of water intoxication may of course be complicated by extrarenal losses or may complicate them, but in its pure form it exists without any excessive loss of sodium from the body. Recent intake-output water balances will show that the patient has had a big intake in relation to output. This intake may be by vein when excessive infusions of 5% dextrose in water may have been given. Such infusions should never exceed normal insensible and renal requirements. Recent trauma accentuates this situation of water intoxication.

The treatment here is firstly to limit the patient's water intake very precisely to "balance." The patient may be given no water whatsoever for 24 hours and allowed to lose some water by the lungs. Surprisingly, patients in this situation may be thirsty despite the water intoxication. This has to be taken into consideration in treatment. One would like to see the patient lose weight rapidly for a day or two and then settle down to weight losses of about 300 gm. a day until oral intake commences. Just as in other instances, it is very important to boost the caloric intake and maintain the blood volume at near normal. The patient should not be given large infusions of anything! There is a great tendency, when encountering an unusual disorder of water and electrolytes, to start an intravenous infusion. This is not needed nor required in such a situation as this. After a period of observation and study, ascertaining the other laboratory measures mentioned above, the patient may be given one infusion of 300 cc. of 3% sodium chloride solution. This may result in a transient elevation of the serum sodium concentration, some diuresis, and "trigger" a redistribution of water and electrolytes toward normal. If a patient in this situation is given enough sodium theoretically to raise the serum sodium concentration completely to normal, the patient will be endangered by congestive heart failure. Body water is high, and a tremendous weight of sodium is required to restore concentrations. What is needed is not more sodium, but for the patient to lose water, and he will do this unless kidney function is remarkably poor. If the patient has not been operated on and is suffering from heart disease, marked fluid restriction and guarded use of mercurial diuretics may be helpful.

Sodium Deficiency.—The patient who is suffering from "sodium deficiency" has a low serum sodium level; he is losing weight and water rapidly; and he is acutely ill, dehydrated, acidotic, and azotemic. In most instances he shows extrarenal losses by vomiting, fistula, diarrhea, or intestinal obstruction. This condition is the classical dehydration about which so much has been written. Notice that the patient is losing weight rapidly. This is an acute situation. When dehydration occurs rapidly, water loss is essentially equal to weight loss. The loss is so large that the changes in fat and lean tissue are not readily apparent. Losses of 2 or 3 kg. in a day from this source therefore indicate the loss of 2,000 to 3,000 cc. of water. Azotemia may be severe, particularly if trauma has occurred in the recent past. Associated with very low urine volume is a urine of high specific gravity and a rising concentration of serum potassium.

It is very important to emphasize that, although this type of sodium deficiency leading to shock with a high hematocrit usually occurs with extrarenal losses, it may also be caused by pathological renal losses, and therein lies the next step in accurate diagnosis. The urine sodium concentration and desoxycorticosterone acetate test must now be considered. When obvious extrarenal losses are not present, or are seemingly inadequate to produce the defect, the patient's urine sodium concentration should be measured immediately. In certain instances this is an emergency laboratory procedure. If the urine sodium concentration is below 25 mEq. per liter (it is often below 1 mEq. per liter) one may consider that the patient's renal tubules are responding normally to the situation and that losses elsewhere are at fault. One occasionally finds, however, that the urine sodium concentration is high. Anything over 30 mEq. per liter is pathological in this type of situation when there is a low serum sodium concentration. It should be noted again that this urine sodium concentration must be measured on a specimen taken when no sodium is being given intravenously. This pathological renal loss is often discovered when there is no extrarenal loss: sodium deficiency may be renal in origin. On this basis, we may divide "sodium deficiency" into two categories. In one, the urine sodium concentration is low and extrarenal losses are high; in the other, the extrarenal losses are low but renal losses of sodium are *high.*

Typical extracellular dehydration due to extrarenal loss is evident when the urine sodium concentration is low, and the extrarenal losses are high. The treatment consists in giving water and salt adequately. It is important to emphasize that water and sodium therapy may have to be massive, yet there are reasonably safe limits to parenteral fluid therapy. In general we have not given more than 300 mEq. of sodium in one day to sick or elderly patients. In one or two instances of remarkable extrarenal loss in young persons we have given them as much as 500 mEq. of sodium in one day. It is important to emphasize that giving a huge water and sodium infusion will inevitably lower the serum protein concentration. The serum protein concentration may be high when the patient is dehydrated, in which case its lowering is not a matter of concern. If it is normal or low to begin with, however, one may find that the restorative treatment, if carried out too rapidly and too energetically, results in the production of generalized edema and hypoproteinemia. This should not be taken to indicate that therapy should be administered gingerly or in a miserly way in this situation. Patients with acute extracellular dehydration (water and sodium loss) must be treated intelligently and energetically. One of the best methods of starting treatment is to back-calculate the loss by history. The past losses may be estimated and the current losses by extrarenal discharges (vomitus, tube drainage, and stools) analyzed. On this basis, the approximate sodium deficiency may be calculated directly in milliequivalents, and the target, of course, is the restoration of these past losses in the course of about three days. No attempt should be made to restore all the past losses at once. It should be noted that analysis of extrarenal discharges is of great importance in this situation. Thus the patient may be treated by "thinking in terms of balance" and a good result achieved. In some patients extrarenal losses are low but renal losses of sodium are high. In the presence of a low serum sodium concentration, a urine sodium concentration over 30 mEq. per liter is pathological. This indicates visceral disease. The next step is to determine what viscus is at fault. For this purpose the patient is given desoxycorticosterone acetate, 3 mg. intramuscularly three times a day. The effect of this drug on the urine sodium concentration constitutes the desoxycorticosterone acetate test.

The desoxycorticosterone acetate test permits us to differentiate this group of urinary sodium deficiencies into another pair of subgroups that might be called "renal failure" and "adrenal failure" as follows. When there is a high urine sodium concentration and it falls normally in response to desoxycorticosterone acetate, this suggests adrenal failure. The renal tubule is quite normal, can respond to hormonal influences, but has not been brought under such influences naturally. It is very important to emphasize that this form of salt-losing adrenal failure after operation may occur in the presence of an eosinophil count that has fallen normally and in the absence of any previous history of overt adrenal disease. The treatment consists of giving water, salt, desoxycorticosterone acetate, and cortisone. The response of the patient may be among the most gratifying therapeutic results obtainable in surgical care. When the urine sodium concentration is high and it remains unchanged after administration of desoxycorticosterone acetate, this suggests renal failure, and it signifies that the patient's renal tubules simply are incapable of responding to a stimulus to sodium resorption. This is usually associated with chronic renal tubular disease. It is very important to emphasize that this may occur in the absence of any previous overt history of renal failure and with a preoperatively normal blood urea nitrogen level. When the crisis is past and the patient is again well, very careful study of kidney function will usually reveal some tubular defect, usually on the basis of senile arteriosclerotic renal disease. The stress of trauma, however, brings out this latent defect, since sodium conservation, which is a normal aspect of the metabolic response to trauma, cannot occur.

The treatment here is to give water and salt "to balance." The urine sodium concentrations must be measured every day and be the basis for the treatment of the patient as regards water and salt. The patient must be nursed through his convalescence with great care. It is important to emphasize that, with this type of tubular defect, metabolic acidosis is very common and severe degrees of azotemia and water retention may also occur. It must again be mentioned that the high urine sodium concentration type of sodium deficiency due to adrenal or renal disease may complicate or be complicated by severe extrarenal losses. This combination requires careful study and therapy.

ADDITIONAL CONSIDERATIONS

Thus we find that with present knowledge of normal metabolism after surgery, of sodium metabolism and distribution, and of renal and adrenal function, it is possible to classify and treat these low sodium syndromes intelligently. Certain special properties of the kidney deserve reemphasis. These relate to the tendency toward sodium resorption that normally follows stress. The normal kidney saves sodium by resorption from the glomerular filtrate (*a*) in response to a low serum sodium concentration or (*b*) in response to injury. It is not generally realized, however, that the normal kidney discards large amounts of sodium in response to excessive loss of chloride. The commonest example is pyloric obstruction in duodenal ulcer. Here we have chloride losses from the stomach that run as high as 300 mEq. a day. The kidney works overtime, trying to keep up with this threatened acid-base imbalance by discarding huge amounts of sodium. The result is that the patient can maintain normal acid-base balance up to a point, but severe electrolyte depletion develops. This persists for about two days; the limit of sodium discard has been reached, then other factors supervene, sodium is conserved, and the patient passes into the very severe metabolic alkalosis so familiar to all surgeons.

The important point to be learned is that if this chloride loss occurs with a stress, such as an operation, the normal renal discard of sodium is blocked by adrenal discharge. Post-trauma sodium conserving forces "win out" in this battle for influence on the renal tubules. The result, therefore, is that the normal renal mechanism that maintains acid-base balance in the face of chloride loss cannot operate, and severe metabolic alkalosis occurs suddenly, severely, and refractorily.

Water Intoxication or Sodium Dilution.—The patient who is suffering from "water intoxication," or "sodium dilution," has a low serum sodium level, is chronically depleted, and may have heart disease, liver disease, or an advanced form of cancer. He may have a severe burn, or he may have been injured recently. He is undernourished and anemic. He is not losing weight normally as he should be if he has been injured, and he may be gaining weight. The water balance is positive, there is no renal or extrarenal loss of sodium, and edema may be present. It should be noted that the emphasis is on depletion, undernourishment, cachexia, and chronic disease. This situation may exist previous to trauma, in which case trauma will accentuate the dilution of normal plasma electrolyte. The precarious situation may not have been recognized prior to the operation, in which case it is often picked up postoperatively when the patient is "not doing well." Notice that the patient may be gaining weight. This can be ascertained only if serial body weight determinations are made. If a patient has been severely injured or has had an extensive operation and is maintaining a steady weight, this is the equivalent of weight gain in the untraumatized state, since the patient should normally be losing weight by mobilization of fat and lean tissue.

Associated findings often include some degree of azotemia. Such patients often show elevations of blood urea nitrogen in the region of 35 to 70 mg. per 100 cc. A low hematocrit and serum protein concentration are evidences of both anemia and extensive water intoxication. Notice that there is no renal loss of sodium; the urine sodium concentration here is low. There is no extrarenal loss of sodium. This particular situation of water intoxication may of course be complicated by extrarenal losses or may complicate them, but in its pure form it exists without any excessive loss of sodium from the body. Recent intake-output water balances will show that the patient has had a big intake in relation to output. This intake may be by vein when excessive infusions of 5% dextrose in water may have been given. Such infusions should never exceed normal insensible and renal requirements. Recent trauma accentuates this situation of water intoxication.

The treatment here is firstly to limit the patient's water intake very precisely to "balance." The patient may be given no water whatsoever for 24 hours and allowed to lose some water by the lungs. Surprisingly, patients in this situation may be thirsty despite the water intoxication. This has to be taken into consideration in treatment. One would like to see the patient lose weight rapidly for a day or two and then settle down to weight losses of about 300 gm. a day until oral intake commences. Just as in other instances, it is very important to boost the caloric intake and maintain the blood volume at near normal. The patient should not be given large infusions of anything! There is a great tendency, when encountering an unusual disorder of water and electrolytes, to start an intravenous infusion. This is not needed nor required in such a situation as this. After a period of observation and study, ascertaining the other laboratory measures mentioned above, the patient may be given one infusion of 300 cc. of 3% sodium chloride solution. This may result in a transient elevation of the serum sodium concentration, some diuresis, and "trigger" a redistribution of water and electrolytes toward normal. If a patient in this situation is given enough sodium theoretically to raise the serum sodium concentration completely to normal, the patient will be endangered by congestive heart failure. Body water is high, and a tremendous weight of sodium is required to restore concentrations. What is needed is not more sodium, but for the patient to lose water, and he will do this unless kidney function is remarkably poor. If the patient has not been operated on and is suffering from heart disease, marked fluid restriction and guarded use of mercurial diuretics may be helpful.

Sodium Deficiency.—The patient who is suffering from "sodium deficiency" has a low serum sodium level; he is losing weight and water rapidly; and he is acutely ill, dehydrated, acidotic, and azotemic. In most instances he shows extrarenal losses by vomiting, fistula, diarrhea, or intestinal obstruction. This condition is the classical dehydration about which so much has been written. Notice that the patient is losing weight rapidly. This is an acute situation. When dehydration occurs rapidly, water loss is essentially equal to weight loss. The loss is so large that the changes in fat and lean tissue are not readily apparent. Losses of 2 or 3 kg. in a day from this source therefore indicate the loss of 2,000 to 3,000 cc. of water. Azotemia may be severe, particularly if trauma has occurred in the recent past. Associated with very low urine volume is a urine of high specific gravity and a rising concentration of serum potassium.

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This general situation leads to the development of hypokalemic alkalosis when potassium losses have also occurred.

In considering acute electrolyte disorders we must therefore give some thought also to those situations in which the kidney is accustomed to excrete large amounts of sodium but cannot do so because of stress. The interplay of all these forces on serum electrolyte concentration is complicated and is often unpredictable. One will be surprised, for instance, on seeing a patient who shows a poststress "sodium paradox" with low serum sodium concentration, to find that the serum potassium concentration is unexpectedly normal or, on occasion, even low. In other situations, when large amounts of sodium have been given to the patient, one may find that the serum potassium concentration has been diluted down to a perilously low level.

It is important to emphasize again that sodium and potassium antagonize each other in the extracellular phase. Giving small amounts of potassium intravenously, such as 40 mEq. each day, to a patient who is not eating will serve to some extent to block the sodium "shift" phenomenon and will assist in maintaining a good serum sodium concentration. Similarly, when the poststress "shift" has produced a high serum potassium concentration and a low serum sodium level, the administration of sodium will help to counteract the effect of the plasma potassium concentration on neuromuscular irritability, cardiac function, and the electrocardiogram. In speaking of "shift" of sodium we are referring to movement of sodium from the extracellular phase (plasma plus interstitial fluid) into some other body area, where it can replace other ions without moving water. Such a shift will lower concentration. Reference has occasionally been made in the literature to a shift of sodium from the plasma to interstitial fluid as a cause of lowered concentration of sodium in the plasma. The physical chemistry of such a result from sodium or water shift across a membrane such as the capillary, which is almost perfectly permeable to sodium and water, is difficult to understand. A massive shift of sodium and water from plasma to interstitial areas could occur without any fall in plasma sodium concentration as long as no sodium-free water is added to the system.

Were sodium to move, in response to endocrine forces, from extracellular fluid into some other body reservoir less permeable to sodium, concentration changes could occur. The mass of body cells (skeletal and muscle) has been considered a site for this shift. Recent evidence suggests that the crystal lattice sodium (the "excess sodium") of bone may indeed be this reservoir, rather than body muscle cells. The giving of concentrated sodium is occasionally of great usefulness. Three per cent sodium chloride or 0.5 M sodium bicarbonate are serviceable solutions. The physician must beware of too rapid administration of such potent solutions in sick patients and remember the inevitable effect on serum protein concentration. Finally, it should be emphasized that kidney cells are like other cells in the body. They require normal extracellular concentrations of electrolyte around them in order to work well. We find that, when there is low serum sodium concentration, renal function often resumes with the administration of sodium. Similarly in hypokalemia good diuresis will occur with the cautious administration of potassium. When there is hyperkalemia and hyponatremia, the administration of sodium may help to lower the serum potassium concentration by promoting diuresis. The kidney has its specific job to do with respect to electrolyte regulations, yet kidney cells themselves are very vulnerable to alteration in extracellular electrolyte concentration.

SUMMARY

A low serum sodium concentration in a patient who has undergone surgery is an unfavorable sign. It is necessary to find the cause and to treat the patient, not the low serum sodium concentration. One patient may need only careful observation and nursing; another may need caloric intake or blood administration. Another patient may need 300 mEq. of sodium infusion very rapidly. Another may need 9 mg. of desoxycorticosterone acetate (DOCA). The differentiation of these different types and therapeutic necessities is the key to success. "Sodium deficiency" or "dehydration" should not be treated unless they are known to exist. In two out of three patients with low serum sodium concentration, neither of these conditions exists. The basic types of disorder are (*a*) the "sodium paradox," (*b*) "water intoxication," and (*c*) "sodium deficiency," which may be divided into two subgroups as follows: (1) the usual situation, in which the extrarenal loss is high and urine sodium concentration is low, and (2) the relatively rare situation, in which the extrarenal loss is low and the urine sodium concentration is high. This group may be further subdivided as follows: (*a*) adrenal failure, in which urine sodium concentration falls in response to desoxycorticosterone acetate, and (*b*) renal tubular failure, in which the urine sodium concentration does not fall in response to desoxycorticosterone. Methods and concepts are thus now available to diagnose the nature of and treat low serum syndromes in surgery.

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Viruses Within Cells.—Before describing the new technique for catching viruses in the process of propagation in the cell, I would like to outline the most recent theory as to how this process takes place. G. S. Stent explained it in detail in his article on "The Multiplication of Bacterial Viruses" in the May issue of *Scientific American*. In infecting a bacterium a bacterial virus first attaches itself to the cell by a needle-like structure which was once believed to be a tail but is now thought to be its proboscis. Through this needle the virus injects into the cell its internal gene-like material, the nucleic acid known as DNA. The emptied protein coat of the virus is left outside, like a disposable container, and plays no further part in the production of offspring. Within the cell the virus's DNA—its reproductive, genetic substance—proceeds to sabotage the bacterium's metabolism, forcing it to produce virus nucleic acid and protein instead of the materials it normally manufactures for its own growth. After a short incubation period, parts of new viruses—just the protein coats—begin to form. Then, a little later, a large number of fully formed viruses rapidly appear in the cell; that these structures are mature viruses is proved by the fact that if extracted and put to the test they show the ability to infect bacteria. When the cell becomes filled with these progeny, it bursts open and the new viruses emerge.—Joseph L. Melnick, *Scientific American*, December, 1953.

CEREBRAL COMPLICATIONS OF PREGNANCY

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This subject is not new to the obstetrician, the neurologist, or the general practitioner. The purpose of this paper is to point out that cerebral complications not only occur during pregnancy but are commoner than previously noted. More detailed clinical examination plus the information made available through recently developed laboratory techniques disclose cerebral symptoms in the mother and permit early application of therapeutic procedure.

The standard textbooks of obstetrics are woefully inadequate on the subject, and even the systems edited by A. H. Curtis [1] and P. Titus [2] devote only brief notice to the subject. The literature documents previous reports, and comprehensive reviews have been published. Among the best is that by Alpers and Palmer.[3] They cite the early account of Ménière, in 1828, who was the first to show that puerperal hemiplegia could be due to cerebral hemorrhage. The frequency was low; Harrar [4] reports one to three deaths in 100,000 confinements, and Villa, two in 10,000 cases. Even early studies indicated that such accidents occurred in young women, and half of von Hösslin's [5] 34 cases of hemiplegia were in women under 30. Two recent articles deal very comprehensively with the subject and are more representative of present thinking: King [6] has published a review of the subject, while Rand and Andler [7] have presented the special problems associated with primary neoplasms of the brain.

Experiences with neurological complications during pregnancy, even in a general hospital with a relatively small obstetric service, indicate that these complications are comparatively frequent. The patients are for the most part private and have had excellent prenatal supervision. Some are clinic and maternity center patients, with equally close prenatal care. No figure is offered as yet because there is no way to calculate accurately just how often such problems occur. Not all obstetricians invite consultation routinely. A fainting spell during the puerperium may presage a convulsive state later in life or a brain tumor the symptoms of which may not be full blown for many years. The pregnancy, and particularly the delivery, may bring to light a cerebral aneurysm that may leak or rupture. Momentary loss of speech may indicate an area of softening that may later act as an epileptogenous focus.

The old idea that convulsions, aphasias, hemiplegias, and syncopal episodes incidental to pregnancy were related solely to toxemias no longer obtains. Some do, of course, but many do not. Some come from conditions present long before the gestation; some develop during, but are not part of, the childbearing process; some are aggravated by the pregnancy; and others are the result, or by-product, of the medical and surgical procedures utilized in modern obstetrics. It is no longer necessary to demonstrate a complete hemiplegia, a frank, classic upper motor lesion, to indicate that cerebral involvement has developed. The small diagnostic signs employed by those who are constantly on the lookout for early evidences of brain tumor are sufficient. A widened palpebral fissure, a flattened nasolabial fold, failure of one platysma to contract, decomposition of fine movement of one arm, or a larval Babinski or Hoffmann sign are all meaningful. The ophthalmoscope is increasingly useful; the electroencephalogram may reveal a dysrhythmic record or a slow wave focus; the angiogram may demonstrate an aneurysm, thrombosis, or tumor; the pneumoencephalogram or ventriculogram may show a distorted ventricular system; and a radioisotope test may reveal a high radioiodine uptake in a given area in the brain, frequently the zone of a neoplasm. Studies of the urine, blood chemistry, and blood pressure are as invaluable as ever, but now one may not stop with these. In this day of medical teamwork, it is often necessary to employ the services of neurological colleagues. One of the gratifying asides of this study has been the accuracy of the observations of the clinical clerks, interns, and residents on the obstetric service of a university-associated general hospital, part of a school in which neurological teaching is emphasized. The cases we have selected are illustrations of the principles mentioned above, and much of the credit for the observations belongs to an alert house staff.

REPORT OF CASES

CASE 1.—A 33-year-old woman, gravida 2, para 1, delivered a 7 lb. 13 oz. (3,534 gm.) baby girl. The first stage of labor lasted 12 hours and 20 minutes, the second 44 minutes. Cyclopropane was given for general anesthesia, and episiotomy and outlet forceps were used. Blood pressure during the procedure ranged in the vicinity of 140/80 mm. Hg. Within about 10 hours after delivery, a full right hemiplegia with expressive aphasia developed (see table). After several days the patient's sensorium cleared, and she showed a right hemiplegia with expressive aphasia. There was no agraphia after the seventh day. She could write with her left hand. Speech began to return the 20th day and motion a few days later.

Spinal fluid examination the day after the vascular accident revealed a pressure of 110 mm. Hg, no cells, and a total protein of 76 mg. per 100 cc. Roentgenograms of the skull showed nothing abnormal.

Three months after delivery the first convulsion occurred while the woman was asleep. She was given analeptic medication. Four months later there was a second seizure. Each

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From the Department of Nervous and Mental Diseases, Northwestern University Medical School, Chicago.

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1. Pollock, L. J.: Neuropsychiatry in Relation to Gynecology and Obstetrics, in Obstetrics and Gynecology, edited by A. H. Curtis, vol. 2, Philadelphia, W. B. Saunders Company, 1933.
2. Titus, P.: Management of Obstetric Difficulties, ed. 3, St. Louis, C. V. Mosby Company, 1945, p. 216.
3. Alpers, B. J., and Palmer, H. D.: The Cerebral and Spinal Complications Occurring During Pregnancy and the Puerperium, J. Nerv. & Ment. Dis. **70**: 465, 1929.
4. Harrar, J. A.: The Causes of Death in Childbirth: Maternal Mortalities in 100,000 Confinements at the New York Lying-In Hospital, Bull. of Lying-In Hosp. N. Y. **11**: 257, 1918.
5. Von Hösslin, R.: Die Schwangerschaftslähmungen der Mutter, Arch. f. Psychiat. **38**: 730, 1904.
6. King, A. B.: Neurologic Conditions Occurring as Complications of Pregnancy, Arch. Neurol. & Psychiat. **63**: 471 (March); 611 (April) 1950.
7. Rand, C. W., and Andler, M.: Tumors of the Brain Complicating Pregnancy, Arch. Neurol. & Psychiat. **63**: 1 (Jan.) 1950.

of these started as a Jacksonian fit involving the right side. There have been no seizures since. The picture was that of a cortical encephalomalacia following a vasospastic episode.

Case 2.—A 19-year-old woman, gravida 1, para 1, delivered a 6 lb. 15 oz. (3,147 gm.) girl after an uneventful pregnancy and labor. The first stage of labor lasted 9 hours, the second 1 hour and 12 minutes. Spinal anesthesia was given, and episiotomy and outlet forceps were used. Four days later during sleep, the woman had a grand mal convulsion. She had had a severe headache that evening. Three more seizures occurred during the same night. The status epilepticus was interrupted by amobarbital (Amytal) sodium given intravenously. Two seizures followed on the fifth postpartum day and two on the sixth. These were all of the grand mal variety. On the 10th day, there was a psychomotor attack. The only abnormal finding was a suggestive left Babinski sign. An electroencephalogram showed a slow wave right frontal lobe focus (fig. 1). A roentgenogram of the skull was normal. The spinal fluid was under a pressure of 110 mm. Hg, contained no cells, and showed total protein 34 mg. per 100 cc. Serologic examination showed nothing abnormal. The colloidal gold curve was 1111100000.

The patient has been receiving analeptic medication, and there have been no seizures to date, some 9 months. Her history showed nothing suggestive of epilepsy or migraine in her family background. Her gestation was normal, and she was normotensive throughout the prenatal and postnatal periods (blood pressure 110-120/80-90 mm. Hg). The urine was always normal. During the status epilepticus, the systolic pressure was recorded as high as 164 mm. Hg.

Table 1.—*Development of Right Massive Hemiplegia with Aphasia in Patient in Case 1*

	Time	Blood Pressure, Mm. Hg	Remarks
P. M.	12:04	140/80	Delivery
	12:55	170/108	....
	1:20	180/80	....
	1:45	160/76	....
	2:40	138/52	....
	3:50	150/70	....
	4:10	150/70	Extremities rigid, patient not responding
	4:30	158/70	....
	5:00	148/80	....
	6:00	146/80	Patient not responding
	7:00	138/80	Recognized husband, no speech
	9:30	120/80	Paralysis on right side noted
	10:30	110/70	Full right hemiplegia with expressive aphasia
	11:30	110/70	....
A. M.	12:00	106/66	....
	2:00	120/80	....

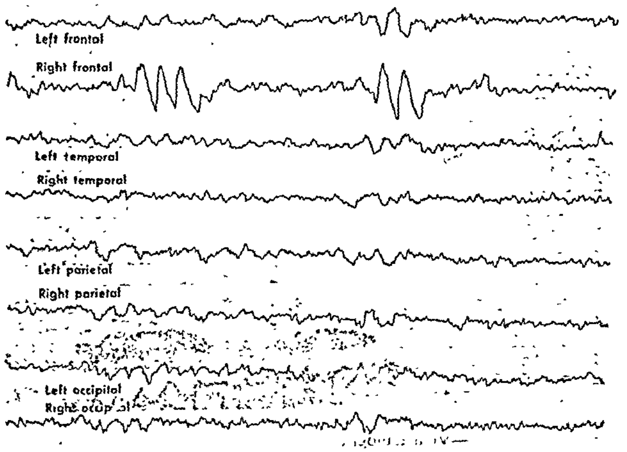

Fig. 1 (case 2).—Electroencephalograms indicating slow wave right frontal focus.

Case 3.—The patient was 21 years old, gravida 1, para 1. Eight days after what appeared to be a normal pregnancy and delivery the woman had a sudden grand mal seizure. This was preceded by a period of inability to speak. Three hours later she had another attack. She was given analeptic medication and was seizure-free for three weeks when she stopped taking the medication. The attacks recurred. Some were periods of inability to speak; others were frank convulsive seizures that sometimes followed in close succession as in a status epilepticus. Administration of amobarbital sodium intravenously was necessary to stop them.

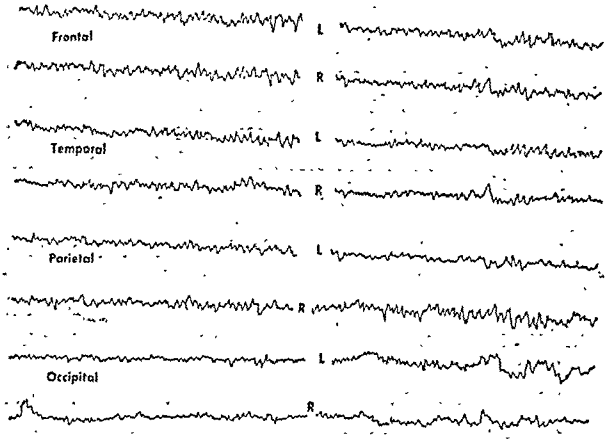

Fig. 2. (case 3).—Electroencephalograms showing low voltage, fast record, with no focal activity and no seizure discharges.

Examination revealed no gross motor defects, but the deep reflexes on the right side were slightly greater than those on the left. Hoffmann sign was present bilaterally, but there were no Babinski signs. Abdominal reflexes were equally sluggish. There were no sensory defects. The right side of the face was slightly flattened. Skull films and radioisotope studies were normal. The spinal fluid pressure was 100 mm. H_2O. The spinal fluid contained 20 cells per cubic millimeter and 57 mg. total protein per 100 cc. Serologic examination was normal as was the colloidal gold curve. An electroencephalogram revealed a low voltage, fast record, with no focal activity and no seizure discharges (fig. 2). The blood pressure while the patient was in the hospital was 150/90 mm. Hg. Blood chemistry studies and urinalysis were always normal. The woman had recurrences of the aphasia episodes as larval attacks, and the right facial paresis persisted. Administration of analeptic medication was continued, and the blood pressure again rose as high as 154/90 mm. Hg. After one year of medication, the spells ceased. The blood pressure now is about 140/80 mm.

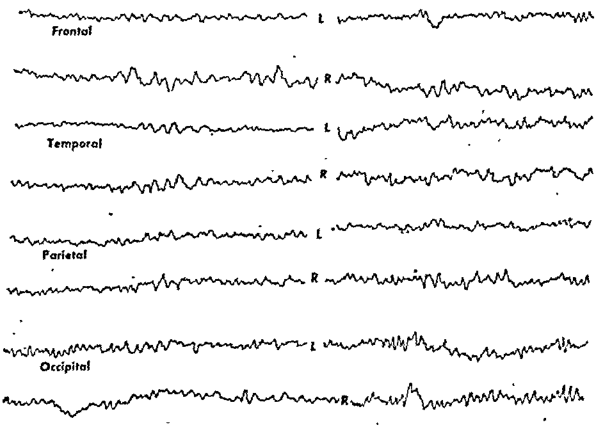

Fig. 3 (case 7).—Electroencephalograms showing a right frontotemporal slow wave focus.

Hg. The facial paresis has faded to only a trace. The electroencephalogram remains normal. Reexamination of the pregnancy revealed that there had been one fainting spell at five months, but this had been transient. Blood pressure had always been between 110-120/80 mm. Hg.

Case 4.—This 34-year-old woman was gravida 1, para 1. She went into hard labor, and, after 10 hours of failure of dilation, a low cervical cesarean section was done. The procedure was well tolerated. All findings were normal. On the 10th postoperative day, a severe headache, with confusion, suddenly developed. Immediate examination revealed a right hemiparesis and mild expressive aphasia. There was no papilledema, but moderate nuchal rigidity was present. A lumbar puncture performed the next day revealed clear fluid, pressure 120 mm. H_2O, no cells, and total protein 40 mg. per 100 cc. Serologic examination was normal. The Lange gold curve was flat. On the third day, pain suddenly developed in the left posterior side of the chest, and the patient went into shock. Her blood pressure fell from 110/70 to 70/40 mm. Hg, and her temperature rose to 101 F. The electrocardiogram was normal, and a pulmonary embolus was suspected. The woman gradually recovered from shock only to have a "shower" of localized recurrences some hours later. Gradually the symptoms cleared. Bishydroxycoumarin (Dicumarol) was given to control development of emboli, but a rigid neck developed and administration of the anticoagulants was stopped. From then on recovery was uninterrupted, and seven months later the woman is symptom-free. All laboratory data, skull films, and urine and blood studies were normal. A diagnosis of cerebral embolism was made.

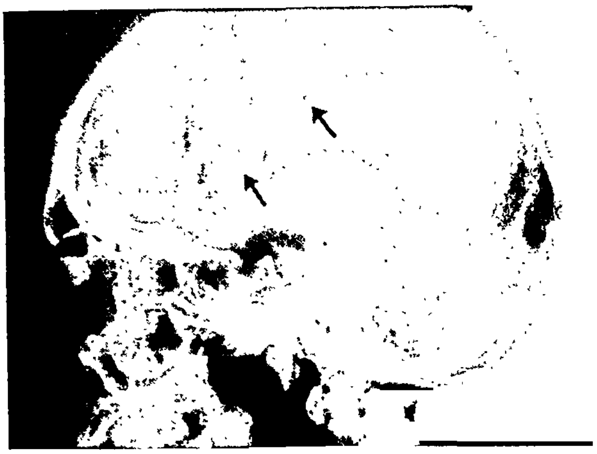

Fig. 4 (case 7).—Roentgenogram of skull showing widened middle meningeal artery (arrows) channel three times wider than the same on the right side.

Case 5.—A 29-year-old woman, gravida 3, para 2, was admitted because of semicoma. One week prior to this admission, she had had a cesarean section terminating her pregnancy at seven months. There had been renal involvement in two earlier gestations. Some hours before admission she had suddenly become dizzy, lost the use of her left extremities, and had projectile vomiting. Finally she lapsed into coma. Examination revealed a comatose patient with circumorbital edema. There was a hemiparesis on the left side, with spasticity. The Babinski sign was present bilaterally and was greater on the left side. The pupils were small and equal, and there was no papilledema. The neck was rigid, and a positive Brudzinski sign was present. A diagnosis of subarachnoid hemorrhage was made. The spinal fluid was under great pressure, 440 mm. H_2O, and was frankly bloody. A bilateral carotid artery angiogram was made and showed an apparent defect in the posterior communicating artery of the right side; the one on the left side was normal. The blood pressure was high, 170/82 mm. Hg. Urinalysis showed 3+ albumin and an occasional red and white blood cell. Blood nonprotein nitrogen was 19 mg. per 100 cc.; chlorides and carbon dioxide combining power were normal. In the hope of helping the patient, the right carotid artery was ligated. The coma deepened, and the woman died 28 hours after surgery. Autopsy revealed a recent subarachnoid and massive interventricular hemorrhage into the right lateral ventricle. The exact vessel that had ruptured could not be determined. The aorta was arteriosclerotic. The right kidney showed chronic pyelonephritis, and there was acute cystitis.

Case 6.—A 20-year-old art student was suddenly seized with a severe right occipital headache. She vomited and was brought to a hospital where the diagnosis on admission was "hysteria." The presence of a bilateral Babinski sign, a Hoffmann sign on the left side, and a rigid neck quickly changed the diagnosis to a "possible subarachnoid hemorrhage." The spinal fluid was under increased pressure, 400 mm. H_2O, and was frankly bloody. The protein content was 400 mg. per 100 cc. Serologic examination was normal, and the colloidal gold curve was flat. The coagulation time was 2 minutes 10 seconds and bleeding time 4 minutes 30 seconds. There were 399,000 platelets per cubic millimeter. The condition was never severer on one side than on the other so no angiogram was tried. The meningeal signs cleared after four weeks, and spinal fluid examination performed then was normal. At the time of discharge, the woman showed only some mild cerebellar signs in speech and gait. She was able to continue her painting. Her first baby was delivered by cesarean section, and two and a half years later she delivered a second child vaginally. A pudendal block was done with lidocaine (Xylocaine) hydrochloride, and episiotomy and low forceps were used. The baby was normal. Subsequent neurological examination of the patient revealed the slight cerebellar gait and speech and the nystagmus observed four years earlier.

Case 7.—The patient, a 31-year-old white woman, was four months pregnant. She complained of headache and "dizzy spells" for six weeks. The "dizzy spells" had occurred frequently for the past few weeks, but the woman had never lost consciousness.

General physical examination was normal; the pulse rate was 88 and blood pressure 90/50 mm. Hg. The uterus indicated a pregnancy of four months. Urine and blood chemistry studies were without note. Neurological examination revealed slight decomposition of fine movements of the left arm and left lower limb and minimal facial paresis of lower two-thirds of the left side of the face. There was only flattening of the left nasolabial fold and widening of the palpebral fissure. Deep reflexes were brisk and equal, and there were no abnormal reflexes. The pupils, optic nerve heads, and visual fields were normal. There were no cortical defects then, but, in the next few days, fleeting Jacksonian twitches were

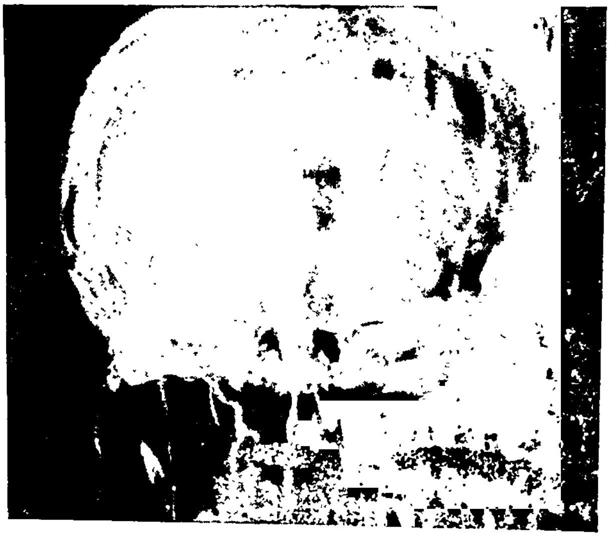

Fig. 5 (case 7). Ventriculogram showing a shift of system toward the left side of the skull.

PHYSIOLOGICAL BOWING OF THE LEGS IN YOUNG CHILDREN

John F. Holt, M.D., Howard B. Latourette, M.D.
and
Ernest H. Watson, M.D., Ann Arbor, Mich.

The developing child is the center of parental adoration as well as a point of critical evaluation by well-meaning relatives and friends. One of the situations in which he is watched and appraised closely is when he begins to stand and walk. Any abnormalities, imaginary or otherwise, observed in the over-all appearance of the child are certain to arouse comment and become a source of worry to the parents. Outward bowing of the lower extremities is a cause of particular concern.

It is recognized anthropologically that virtually all infants have some degree of genu varum deformity that frequently persists into the second or third year of life before normal physiological development converts the mild bowing into an equally mild degree of genu valgum.[1] In some instances the bowing is largely due to normal distribution of adipose tissue, which in infancy tends to be more heavily deposited on the outer surfaces of both the thigh and lower leg, but in most infants some degree of actual osseous bowing is present. Only when the extent of bowing transcends arbitrarily and poorly established limits of normal do diagnostic difficulties arise.

There are numerous explanations for exaggerated bowing of the legs at different age periods but, because such deformity is so classically associated with rickets in the minds of parents and physicians alike, it frequently carries with it the inference that in some manner parents have neglected their growing child. In an attempt to eliminate parental feelings of self-recrimination, physicians usually resort to roentgen examination of the lower extremities for assistance in ruling out such abnormality. This is an admirable and often helpful approach to the problem, but all too often undue pathological importance is attached to the wide variety of anatomic and physiological variants that occur in the plastic, rapidly mineralizing bones of the growing child. As a result, an erroneous roentgenologic diagnosis of

plements, and a normal environment. They tend to be overweight but, in general, appear perfectly normal. Their parents seek medical care solely because of the pronounced bowing of the legs. We do not know exactly how many of these bowlegged children have been seen at University Hospital, but pertinent follow-up data have been accumulated on 14 such patients, most of whom were referred to the hospital as having rickets. In others, a diagnosis of either rickets or infantile tibia vara (Blount's osteochondrosis deformans tibiae)[2] was suggested by various consultants within the hospital.

The roentgenologic findings in these patients do not appear to be compatible with either rickets or osteochondrosis. To the casual observer, they may seem to be strikingly abnormal, but careful, comparative scrutiny of these findings suggests that they are nothing more than a combination of normal anatomic variants and secondary manifestations of adaptation of skeletal structure to function. The fact that spontaneous regression of the bowing as well as the secondary structural changes occurred in all of the 14 patients supports the contention that many such deformities are physiological and of little clinical significance.

The following brief case reports are representative of the group that was studied. Three of the patients are siblings whose father is a member of the hospital staff. Fortunately the father was not unduly alarmed by the pronounced bowing of his children's legs, and this afforded us an excellent opportunity to observe the relatively rapid regression of the deformities that occurred without any form of definitive treatment whatsoever.

REPORT OF CASES

CASE 1.—The child was born on Jan. 17, 1939, and was seen in this institution for the first time at the age of 18 months on Aug. 20, 1941. The child had started walking at 8 months of age, and at that time the parents noted that there was bowing of the lower extremities. The dietary history in such abnormality at the age of 18 months. The argument that this patient had healed rickets would be more convincing if we had not observed subsequently so many bowlegged children with identical roentgenologic changes—children who had adequate vitamin D intake and no x-ray evidence of rickets in infancy.

Case 2.—The infant was born at University Hospital on Dec. 21, 1947, the result of a normal pregnancy and delivery. He was breast fed, and adequate vitamin supplements were given. Growth and development progressed normally, and there was no serious illness. On July 11, 1949, he was brought into the pediatric outpatient department because friends of the family thought he was "bowlegged." Roentgenograms exposed at the age of 18 months showed definite outward bowing of both lower extremities, with thickening of the medial cortex, flaring of the medial metaphyses, and wedge-shaped development of the distal femoral epiphyses (fig. 2*A*). The epiphyseal lines were normal, and there was no evidence of abnormal bone growth. The patient was again seen here at the age of 3½ years on May 28, 1951. At that time roentgenograms of the lower extremities showed definite improvement in the degree of bowing of the lower extremities and normal development about the ends of the long bones of the lower extremities. The activity of this child had been restricted in no way, and the previously noted bowing largely disappeared with advancing growth. Recent check-up examination on March 13, 1953, showed still further straightening of the legs (fig. 2*B*).

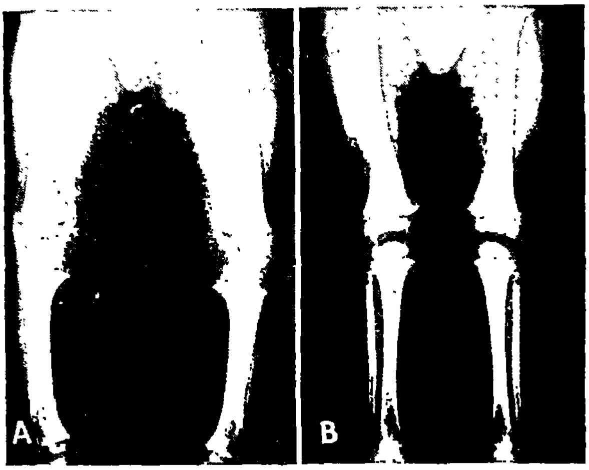

Fig. 1.—*A*, profound bowing of lower extremities of 18-month-old child who was otherwise normal. Femoral and tibial metaphyseal flaring, thickening of medial tibial cortex, widening of medial portions of provisional calcification zones, and wedging of epiphyses are structural changes secondary to the bowing. Fragmentation of medial femoral epiphyses merely represents normal variation in rapidly mineralizing growth centers. *B*, legs of a normal, thin, slightly knock-kneed child of approximately same age for comparison with *A*. The secondary structural changes and anatomic variants described above are absent.

Case 3.—This child is a full brother of the patient in case 2. He was born on May 13, 1950, and was also the result of a normal pregnancy and delivery. He was put on the usual dosage of multivitamin (Abdec) drops upon discharge from the hospital and was followed repeatedly in the pediatric outpatient department of this institution. At the age of 1 year on May 28, 1951, it was noted that he had definite bowed legs (fig. 3*A*). Films of the lower extremities showed changes very similar to those in cases 1 and 2. There was marked bowing of the lower extremities, with flaring of the medial metaphyses about the knees and definite thickening of the inner aspect of the cortices. Subsequent examination on April 9, 1952, including roentgenograms of the lower extremities, showed persistence of the bowing with the characteristics unchanged [illegible] for the progress of growth. The most recent examination [illegible] 13, 1953, showed dramatic improvement, both [illegible] roentgenologically (fig. 3*B*).

Case 4.—The child is a full brother of the patients in cases 2 and 3. He was born on July 13, 1951, and was also the result of a normal pregnancy and delivery. At the time of discharge from Maternity Hospital there was no evidence of abnormality. The child was followed in the pediatric outpatient department, and on Jan. 25, 1952, at the age of 6 months, moderate bowing of the lower extremities was noted. Roentgenograms were exposed, and again the moderate flaring of the medial metaphyses about the knee together with of the inner thickening tibias was noted. There was no evidence of rickets at the all-important metaphyseal-epiphyseal junctions. Reexamination on May 13, 1953, showed appreciable improvement in the degree of bowing.

Case 5.—The boy was born on July 2, 1948, the first child of healthy young parents. Pregnancy and delivery were normal. Daily administration of multivitamin drops was started at 1 week of age. Growth and development were normal; actually both were somewhat accelerated. The infant walked at 9 months. The child had had continuous and adequate medical supervision, but was brought to one of us (E. H. W.) at 15 months because the neighbors strongly urged the mother to see what was wrong with his legs. The mother had not been concerned, particularly because she had been told that she too was quite "bowlegged" as a young child. In fact, the patient's grandmother had advised ignoring the bowing. The patient's mother had "outgrown" her early bowlegged state in a few years according to family history. Roentgenologic examination of the legs showed outward bowing of both tibias, with secondary changes similar to those cited in the previous case reports—changes we have come to regard as variations of normal bone growth rather than evidence of rickets or osteochondrosis. The calcium, phosphorus, and phosphatase levels were respectively 14.3 mg., 5.8 mg., and 10.9 units per 100 cc. at the time the child was first seen and at a time when the bowing was maximal. No special therapy was given, but by 5 years of age the bowing had completely disappeared.

The familial aspect of bowlegs, exemplified by cases 2, 3, 4, and 5, seems to be well established. Very likely, this fact is of no greater significance than similar minor familial tendencies such as protruding ears, a large nose, or prominent supraorbital ridges.

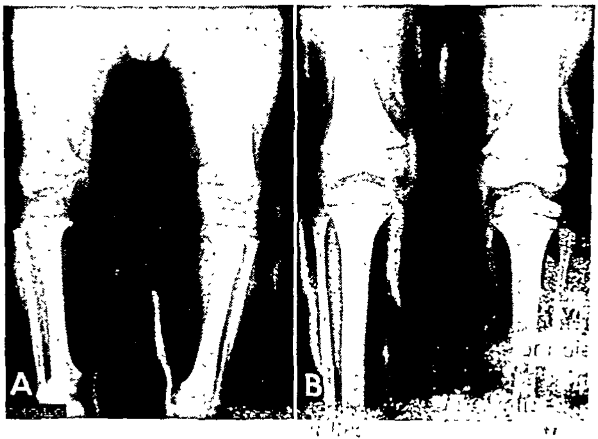

Fig. 2 (case 2).—*A*, lower extremities of healthy 18-month-old boy. There is pronounced bowing at the knees, thickening of medial tibial cortex, flaring and recurring of medial metaphyses at the knees, and wedging of distal femoral epiphyses. *B*, same child at age 5 years. The clinically straight legs have a normal radiological appearance. Most of this spontaneous improvement occurred before the age of 4 years.

COMMENT

As can be readily seen by the representative cases just described, the roentgenographic appearance of patients with physiological bowing is a rather constant one. In the entire group of [illegible] there was outward bowing, which usually involved both femurs and tibias. In one noted in the left side of the face and the left shoulder. The vessels of the left disk seemed to be filling and the hemiparesis increasing. The spinal fluid pressure was under 240 mm. H_2O. The spinal fluid contained protein, 20 mg. per 100 cc., and no cells. Serologic examination and the colloidal gold curve were normal. The electroencephalogram showed a right frontotemporal slow wave focus (fig. 3). The skull film showed a widened middle meningeal artery channel three times the width of its counterpart on the right side (fig. 4).

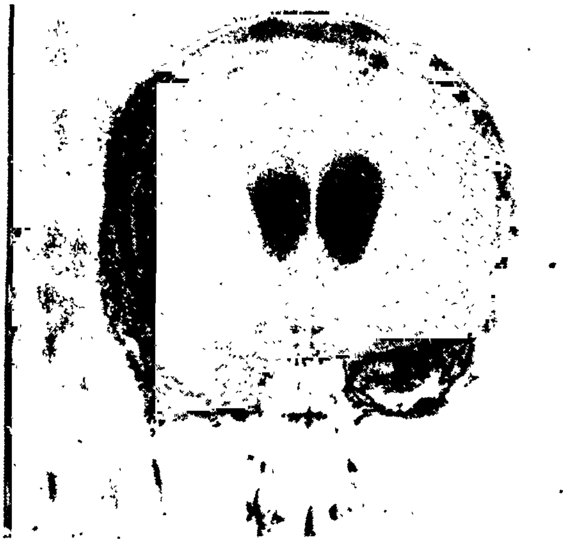

Fig. 6 (case 8).—Ventriculogram showing symmetrically enlarged lateral and anterior portions of the third ventricle.

In view of the increasing engorgement of the vessels of the left optic disk, a ventriculogram was done. This showed a shift of the ventricular system to the left (fig. 5). In view of the large vessel seen on the film, a meningioma was suspected. A right osteoplastic flap was turned, and a huge meningioma about the size of an orange was removed. Postoperatively the woman did very well, except for a rare twitching in the left side of the face. She was given diphenylhydantoin (Dilantin) sodium and phenobarbital.

About five months later, a baby girl was delivered by cesarean section. The child appeared normal, but in two months it was noted that her left thigh tended to cross over. Deep reflexes were very brisk, but there were no other abnormal responses. She is being watched for evidence of cerebral abnormality. The mother continues to do well.

Case 8.—A 20-year-old woman, gravida 2, para 2, delivered a full-term baby two months before the present admis[illegible] spinal anesthesia had been used, but the woman had had a persistent headache ever since the delivery. At times [illegible] double. Coughing produced pain down the neck, spine, and arms. This was the [illegible] time this patient had had spinal [illegible] ous occasion, one and a [illegible] headache.

[illegible] or reflex disturbances [illegible] right side of the [illegible] sensation was intact to all [illegible] lateral choked [illegible] was present [illegible] was 98/50 [illegible] that the [illegible] encephalogram [illegible] exactly [illegible] ventriculogram [illegible] symmetrically enlarged [illegible] portions of the [illegible] ventricle (fig. 5). The [illegible] to be larger than [illegible] larged, but the posterior [illegible] visualized (fig. 7A). [illegible] obstruction, probably [illegible] cording [illegible] Torkildsen's [illegible] no. 10 French catheter inserted to connect the left lateral ventricle with the cisterna magna (fig. 7B). The patient's headaches subsided, and her vision improved.

COMMENT

Of these eight patients, only one died. Although she was only 29 years of age, the autopsy revealed arteriosclerosis of the aorta and chronic pyelonephritis. The woman also had had a massive cerebral hemorrhage that ruptured into the lateral ventricle. Her hypertension had been moderate and precautions taken, a cesarean section in the seventh month, but these were to no avail. What appeared to be a good result at the surgery vanished one week later when the vessel ruptured. Our experiences in neuropathology would suggest that this vessel was in an area of encephalomalacia and probably had damaged walls.

The patient in case 1 must have had a massive thrombosis, with a large area of softening, in the postpartum period. The hypertensive symptoms appeared within the first hour after delivery and lasted 6 to 7 hours. The nature of the recovery of motion and speech seems to exclude the presence of a large hemorrhage, but the epileptic focus was established and required analeptic medication for control. Certainly she should avoid future pregnancies.

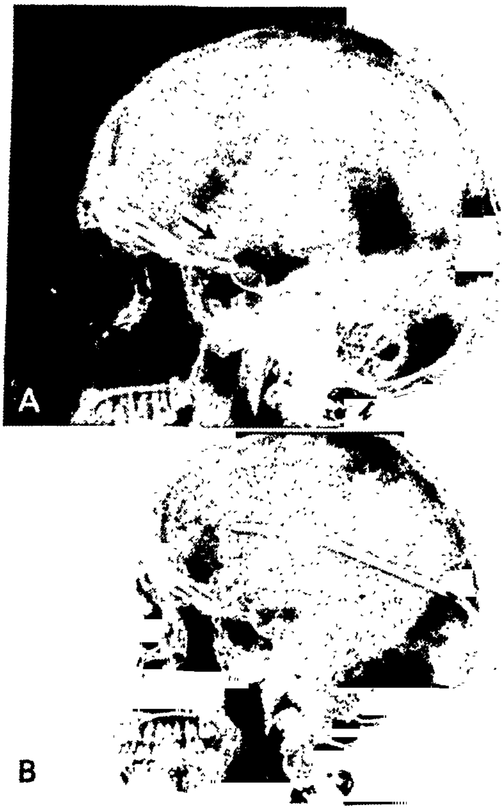

Fig. 7 (case 8).—*A*, roentgenogram showing that posterior portion of third ventricle was not filled (arrow), and, *B*, roentgenogram taken after Torkildsen's operation showing no. 10 French catheter connecting left lateral ventricle with cisterna magna.

The patients in cases 2 and 3 face a problem. Each is now in her beginning twenties. Each has only one child and wants more. Should either become pregnant? The patient in case 2 experienced a status epilepticus lasting for three days and occasional seizures persisting for three more days. Her electroencephalogram shows a definite focus, and clinically she showed a Babinski sign for weeks. The patient in case 3 had several seizures, that is, attacks of aphasia for over a year. She shows neurological evidence corresponding to this localization. Although her electroencephalogram reveals no dysrhythmia, her constitutional makeup and vascular response is that of the future hypertensive. Further pregnancies are definitely a risk from the neurological standpoint.

The development of emboli in case 4 was incidental to the cesarean section. Whether the emboli appeared after being filtered out in the lung and after the fragments broke into the systemic circulation cannot be determined. Certainly there were pulmonary emboli. The role of the vertebral veins as a route from the pelvis to the brain has been described by Batson.[8] Nuchal rigidity was a prominent symptom in this case and suggests that pathological conditions had been developing along the base of the skull. The British school[9] has emphasized the role of thrombosis of the venous sinuses in the production of hemiplegia after delivery. Martin thinks that bits of blood clot are carried from the pelvic veins, by way of the paravertebral plexus, to the cranium. In the patient in this case (case 4) the convulsions and the papilledema usually accompanying the picture of venous thrombosis did not develop. The danger in the use of anticoagulants in the presence of cerebral involvement is well illustrated here; the use of bishydroxycoumarin produced a recurrence of the nuchal rigidity (possibly due to blood seepage through damaged vessel walls).

The patient in case 6 had a previous subarachnoid hemorrhage. Her first pregnancy was completed successfully with the aid of a cesarean section, the second with a pudendal block. In neither instance was the patient permitted to strain or bear down much; this was in order to prevent an increase in intracranial blood pressure. Pregnancy in such a patient is definitely a risk, and the danger of blowing out the aneurysm is great; however, when pregnancy does occur, every aid must be given these patients.

The two patients with brain tumor present different problems. It is the consensus of most investigators that meningiomas and neurinomas increase in size during pregnancy. Angiomas become engorged, develop thrombi, and hemorrhage. The diagnosis of meningioma in the patient in case 7 seemed quite evident, but the Jacksonian seizures and the beginning papilledema made surgery imperative. The operation was quick and relatively easy so this cannot be associated with possible damage to the child. In contrast, in case 8 the patient came for care post partum. She undoubtedly had a tumor of the third ventricle. The course would suggest a benign lesion, possibly a paraphysial cyst. Such tumors are often pedunculated and hang from the roof of the ventricle. The spinal puncture for anesthesia probably caused the tumor to push down posteriorly in a ball-valve action, thereby choking off the cerebral aqueduct. The Torkildsen's procedure circumvents the block and restores cerebrospinal fluid circulation.

It may be pointed out that four of the seven patients surviving are now suffering from a chronic convulsive state. While analeptic medication fortunately controls all of them, the grave significance of cerebral complications associated with pregnancy is clearly established.

SUMMARY AND CONCLUSIONS

Cerebral complications associated with pregnancy are commoner than usually admitted and may occur under the best obstetric management. Such conditions may be related to the process of gestation, may be accompaniments of procedures utilized in obstetric practice, or may be entirely coincidental. Illustrative cases of hypertensive vascular accidents with encephalomalacia, frank hemorrhage into the brain, subarachnoid hemorrhage, thrombosis, and embolism are presented. Two cases of brain tumor are described. One appeared and was operated on during pregnancy; the other occurred after delivery. The importance of careful neurological review of unusual obstetric cases is emphasized particularly, because cerebral complications are dangerous and are often the basis for a future convulsive state.

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[8] Batson, O. V.: Function of the Vertebral Veins and Their Role in the Spread of Metastases, Ann. Surg. 112: 138, 1940.

[9] Collier, W.: Thrombosis of the Cerebral Vein, Brit. M. J. 1: 521, 1891. Martin, J. P.: Thrombosis in the Superior Longitudinal Sin. Following Childbirth, ibid. 2: 537, 1941. Martin, J. P., and Sheehan, H. L.: Primary Thrombosis of the Cerebral Veins Following Childbirth, ibid. 1: 349, 1941. Symonds, C. P.: Cerebral Thrombophlebitis, ibid. 2: 348, 1940.

Dental Caries.—With the large amount of publicity given to the relationship of fluorine in drinking water and the prevention of caries, the much more important relationship of diet and caries is apt to be overlooked. A recent report in Australia [illegible] serves as a reminder that the real solution of the problem of preventing dental caries is dietetic. Workers from the Institute of Dental Research studied a group of 81 children of European stock of both sexes, living a supervised institutional life. . . . The majority of these children, whose age at the time of examination ranged from 4 to 9 years, had been living in the institution since the earliest months of life. The diet of the children consisted mainly of wholemeal bread, wholemeal biscuit, wholemeal porridge, wheat germ, fruits (fresh and dried), vegetables (cooked and raw), butter, cheese, eggs, milk and fruit juices and practically no meat. This was supplemented with vitamin concentrates, honey or molasses as a sweetening agent on occasion, and nuts. Such items as sugar (white and brown), white flour products and tea, were absent from the diet. As far as possible, food was taken [illegible] and/or with a minimum [illegible] preparation. An examination of the water supply sho[illegible] fluoride [illegible] sent. The teeth were examined [illegible] radiographic examin[illegible] that 63 of the group of 81 children w[illegible] compared with 4% [illegible] caries in a Sydney group [illegible] controlled d[illegible] number of decayed missing [illegible] filled teeth [illegible] the Sydney [illegible] for the [illegible] mately [illegible] widening of the caries [illegible] to [illegible] a group used f[illegible] pa[illegible] to the results of [illegible]ridation [illegible] appears to reduce [illegible] es [illegible] incidence.—Child Health; [illegible] of Health [illegible] Commonwealth [illegible] of Health, Septem[illegible]

PHYSIOLOGICAL BOWING OF THE LEGS IN YOUNG CHILDREN

John F. Holt, M.D., Howard B. Latourette, M.D.
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The developing child is the center of parental adoration as well as a point of critical evaluation by well-meaning relatives and friends. One of the situations in which he is watched and appraised closely is when he begins to stand and walk. Any abnormalities, imaginary or otherwise, observed in the over-all appearance of the child are certain to arouse comment and become a source of worry to the parents. Outward bowing of the lower extremities is a cause of particular concern.

It is recognized anthropologically that virtually all infants have some degree of genu varum deformity that frequently persists into the second or third year of life before normal physiological development converts the mild bowing into an equally mild degree of genu valgum.[1] In some instances the bowing is largely due to normal distribution of adipose tissue, which in infancy tends to be more heavily deposited on the outer surfaces of both the thigh and lower leg, but in most infants some degree of actual osseous bowing is present. Only when the extent of bowing transcends arbitrarily and poorly established limits of normal do diagnostic difficulties arise.

There are numerous explanations for exaggerated bowing of the legs at different age periods but, because such deformity is so classically associated with rickets in the minds of parents and physicians alike, it frequently carries with it the inference that in some manner parents have neglected their growing child. In an attempt to eliminate parental feelings of self-recrimination, physicians usually resort to roentgen examination of the lower extremities for assistance in ruling out such abnormality. This is an admirable and often helpful approach to the problem, but all too often undue pathological importance is attached to the wide variety of anatomic and physiological variants that occur in the plastic, rapidly mineralizing bones of the growing child. As a result, an erroneous roentgenologic diagnosis of rickets or some significant developmental abnormality is made. This complicates the social aspects of the problem, probably initiates costly, time-consuming therapeutic measures that may be entirely unnecessary, and, as has been shown recently, actually entails the risk of inducing hypervitaminosis.[2]

It is our desire to call attention to a rather commonly encountered group of markedly bowlegged children who usually have had an adequate diet, regular vitamin supplements, and a normal environment. They tend to be overweight but, in general, appear perfectly normal. Their parents seek medical care solely because of the pronounced bowing of the legs. We do not know exactly how many of these bowlegged children have been seen at University Hospital, but pertinent follow-up data have been accumulated on 14 such patients, most of whom were referred to the hospital as having rickets. In others, a diagnosis of either rickets or infantile tibia vara (Blount's osteochondrosis deformans tibiae)[3] was suggested by various consultants within the hospital.

The roentgenologic findings in these patients do not appear to be compatible with either rickets or osteochondrosis. To the casual observer, they may seem to be strikingly abnormal, but careful, comparative scrutiny of these findings suggests that they are nothing more than a combination of normal anatomic variants and secondary manifestations of adaptation of skeletal structure to function. The fact that spontaneous regression of the bowing as well as the secondary structural changes occurred in all of the 14 patients supports the contention that many such deformities are physiological and of little clinical significance.

The following brief case reports are representative of the group that was studied. Three of the patients are siblings whose father is a member of the hospital staff. Fortunately the father was not unduly alarmed by the pronounced bowing of his children's legs, and this afforded us an excellent opportunity to observe the relatively rapid regression of the deformities that occurred without any form of definitive treatment whatsoever.

REPORT OF CASES

CASE 1.—The child was born on Jan. 17, 1939, and was seen in this institution for the first time at the age of 18 months on Aug. 20, 1941. The child had started walking at 8 months of age, and at that time the parents noted that there was bowing of the lower extremities. The dietary history in this case was that there was some lack of vitamin D intake during the first year. Orange juice was given frequently. The parents had noted that since the age of 1 year the bowing of the lower extremities had improved. At the time of examination there was a definite genu varum deformity with outward bowing of both tibias. There was no functional abnormality of the legs, and the patient walked well. A roentgenogram (fig. 1*A*) of the lower extremities at that time showed outward bowing of the lower extremities, "broadening" of the zones of provisional calcification, flaring of the medial metaphyses about the knees, wedging and irregular ossification of the distal femoral epiphyses, and pronounced thickening of the inner cortex of the tibias. The patient was seen five years later and, although there was slight residual bowing, there was definite improvement in the degree of the deformity. The child had encountered no difficulty whatsoever.

It is significant that in 1941, the pediatrician, orthopedist, and roentgenologist all agreed that this child had rickets. With the questionable vitamin D intake, it is entirely possible that he did have rickets during infancy, but he certainly did not have roentgenologic signs of

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From the Departments of Radiology and Pediatrics, University of Michigan.

Read before the Joint Meeting of the Section on Pediatrics and the Section on Radiology at the 102nd Annual Meeting of the American Medical Association, New York, June 2, 1953.

[1] Bohm, M.: Infantile Deformities of the Knee and Hip, J. Bone & Joint Surg. 15: 574-578 (July) 1933. Blount, W. P.: Bow Leg, Wisconsin M. J. 40: 484-487 (June) 1941. Geppert, L. J.: Physiological Knock Knee, A. M. A. Am. J. Dis. Child. 83: 154-155 (Feb.) 1952.

[2] Goldzier, S. E., III; [illegible], and Wald, A. [illegible]: Hypervitaminosis [illegible], J. Pediat. 41: 198-201 (Aug.) 1952.

[3] Blount, W. P.: Tibia Vara: Osteochondrosis Deformans Tibiae, J. Bone & Joint Surg. 19: 1-29 (Jan.) 1937.

such abnormality at the age of 18 months. The argument that this patient had healed rickets would be more convincing if we had not observed subsequently so many bowlegged children with identical roentgenologic changes—children who had adequate vitamin D intake and no x-ray evidence of rickets in infancy.

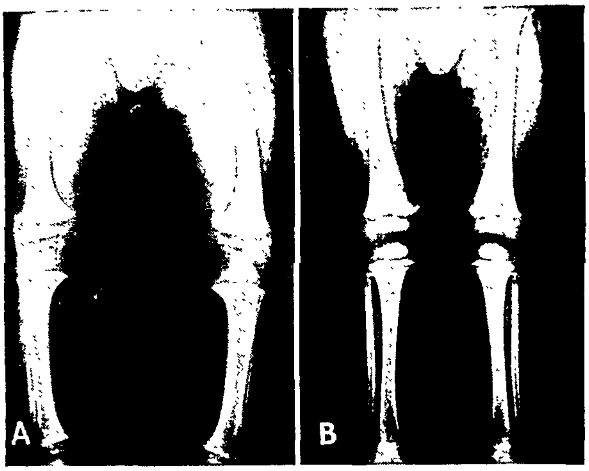

Fig. 1.—*A*, profound bowing of lower extremities of 18-month-old child who was otherwise normal. Femoral and tibial metaphyseal flaring, thickening of medial tibial cortex, widening of medial portions of provisional calcification zones, and wedging of epiphyses are structural changes secondary to the bowing. Fragmentation of medial femoral epiphyses merely represents normal variation in rapidly mineralizing growth centers. *B*, legs of a normal, thin, slightly knock-kneed child of approximately same age for comparison with *A*. The secondary structural changes and anatomic variants described above are absent.

Case 2.—The infant was born at University Hospital on Dec. 21, 1947, the result of a normal pregnancy and delivery. He was breast fed, and adequate vitamin supplements were given. Growth and development progressed normally, and there was no serious illness. On July 11, 1949, he was brought into the pediatric outpatient department because friends of the family thought he was "bowlegged." Roentgenograms exposed at the age of 18 months showed definite outward bowing of both lower extremities, with thickening of the medial cortex, flaring of the medial metaphyses, and wedge-shaped development of the distal femoral epiphyses (fig. 2*A*). The epiphyseal lines were normal, and there was no evidence of abnormal bone growth. The patient was again seen here at the age of 3½ years on May 28, 1951. At that time roentgenograms of the lower extremities showed definite improvement in the degree of bowing of the lower extremities and normal development about the ends of the long bones of the lower extremities. The activity of this child had been restricted in no way, and the previously noted bowing largely disappeared with advancing growth. Recent check-up examination on March 13, 1953, showed still further straightening of the legs (fig. 2*B*).

Case 3.—This child is a full brother of the patient in case 2. He was born on May 13, 1950, and was also the result of a normal pregnancy and delivery. He was put on the usual dosage of multivitamin (Abdec) drops upon discharge from the hospital and was followed repeatedly in the pediatric outpatient department of this institution. At the age of 1 year on May 28, 1951, it was noted that he had definite bowed legs (fig. 3*A*). Films of the lower extremities showed changes very similar to those in cases 1 and 2. There was marked bowing of the lower extremities, with flaring of the medial metaphyses about the knees and definite thickening of the inner aspect of the cortices. Subsequent examination on April 9, 1952, including roentgenograms of the lower extremities, showed persistence of the bowing with the characteristics unchanged except for the progress of growth. The most recent examination on May 13, 1953, showed dramatic improvement, both clinically and roentgenologically (fig. 3*B*).

Case 4.—The child is a full brother of the patients in cases 2 and 3. He was born on July 13, 1951, and was also the result of a normal pregnancy and delivery. At the time of discharge from Maternity Hospital there was no evidence of abnormality. The child was followed in the pediatric outpatient department, and on Jan. 25, 1952, at the age of 6 months, moderate bowing of the lower extremities was noted. Roentgenograms were exposed, and again the moderate flaring of the medial metaphyses about the knee together with of the inner thickening tibias was noted. There was no evidence of rickets at the all-important metaphyseal-epiphyseal junctions. Reexamination on May 13, 1953, showed appreciable improvement in the degree of bowing.

Case 5.—The boy was born on July 2, 1948, the first child of healthy young parents. Pregnancy and delivery were normal. Daily administration of multivitamin drops was started at 1 week of age. Growth and development were normal; actually both were somewhat accelerated. The infant walked at 9 months. The child had had continuous and adequate medical supervision, but was brought to one of us (E. H. W.) at 15 months because the neighbors strongly urged the mother to see what was wrong with his legs. The mother had not been concerned, particularly because she had been told that she too was quite "bowlegged" as a young child. In fact, the patient's grandmother had advised ignoring the bowing. The patient's mother had "outgrown" her early bowlegged state in a few years according to family history. Roentgenologic examination of the legs showed outward bowing of both tibias, with secondary changes similar to those cited in the previous case reports—changes we have come to regard as variations of normal bone growth rather than evidence of rickets or osteochondrosis. The calcium, phosphorus, and phosphatase levels were respectively 14.3 mg., 5.8 mg., and 10.9 units per 100 cc. at the time the child was first seen and at a time when the bowing was maximal. No special therapy was given, but by 5 years of age the bowing had completely disappeared.

The familial aspect of bowlegs, exemplified by cases 2, 3, 4, and 5, seems to be well established. Very likely, this fact is of no greater significance than similar minor familial tendencies such as protruding ears, a large nose, or prominent supraorbital ridges.

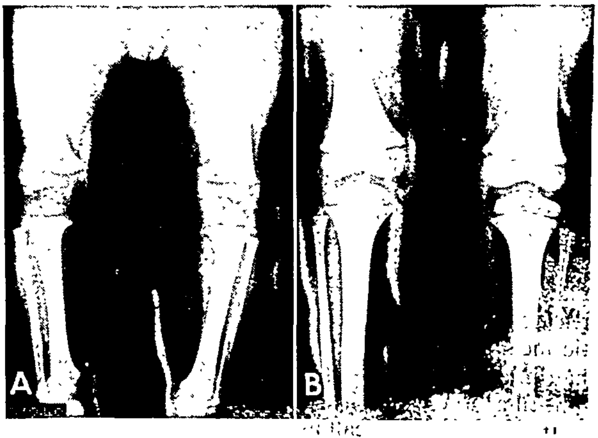

Fig. 2 (case 2).—*A*, lower extremities of healthy 18-month-old boy. There is pronounced bowing at the knees, thickening of medial tibial cortex, flaring and recurring of medial metaphyses at the knees, and wedging of distal femoral epiphyses. *B*, same child at age 5 years. The clinically straight legs have a normal radiological appearance. Most of this spontaneous improvement occurred before the age of 4 years.

COMMENT

As can be readily seen by the representative cases just described, the roentgenographic appearance of patients with physiological bowing is a rather constant one. In the entire group of [illegible] cases there was outward bowing, which usually involved both femurs and tibias. In one instance the degree of involvement of the femurs exceeded that of the tibias, and in another the reverse was true. In all cases there was thickening of the inner diaphyseal cortex of the femurs and tibias in approximate proportion to the degree of bowing present. The distal femoral epiphyses were triangular rather than oval in shape, with the medially directed apex of each triangular epiphysis often fragmented in appearance. Similar alterations in the shape of the tibial epiphyses were much less frequently observed. Accentuated flaring of the medial metaphyses of both the femurs and tibias at the knees was a constant finding, and here also the changes usually were more pronounced in the femurs than in the tibias. In some patients there seemed to be actual overgrowth of bone in one or both medial femoral metaphyses, producing a bulbous appearance and posterior spurring not observed in the tibias (fig. 4). Often associated with outward bowing of the legs was a varying degree of internal angulation of the distal tibial metaphysis along with minimal wedging of the adjacent epiphysis. In no instance was there convincing roentgenologic evidence of rickets, osteochondritis, dyschondroplasia, osteogenesis imperfecta, neurofibromatosis, or any other pathological condition that might account for the changes seen.

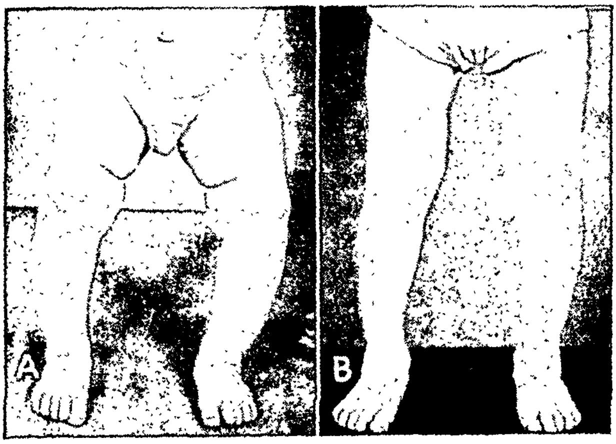

Fig. 3 (case 3).—Healthy brother of patient in case 2, with marked bowing of legs. The photographs show the appearance of legs at age 10 months (*A*) and 3 years (*B*). The straightening occurred spontaneously.

As far as we have been able to determine, there are only two references to bowing of the type described in [illegible] radiological literature. One of these is in [illegible] recently published book on bone disorders, in which the subject is briefly discussed in conjunction with rickets. Although Pugh states that the etiology of this type of ge[illegible] is unknown, "there is great probability that it is not a result of rickets." To this statement, we readily subscribe. Having observed patients as young as [illegible] months of age who eventually exhibited the roentgenologic changes described above and having followed [illegible] patients for periods of [illegible] to 10 years, we are convinced that the bowing is nonrachitic. The history of adequate vitamin D intake coupled with normal results of serum calcium, phosphorus, and alkaline phosphatase determinations as well as the total absence of roentgenologic signs of rickets at the all-important epiphyseal-metaphyseal junctions simply makes such a diagnosis untenable. So-called refractory or resistant rickets is ruled out by the progressive, spontaneous improvement that, in our experience, inevitably occurs. Resistant rickets just does not behave in such a manner.

The other reference is by Barber,[5] who reports the case of a 17-month-old child, under the title of osteochondrosis deformans tibiae, with roentgenologic changes *identical to those described herein. By way of review,* osteochondrosis deformans tibiae or tibia vara are the pathological and descriptive anatomic terms respectively applied by Blount [6] to a form of ischemic necrosis *that classically involves one or both medial tibial* plateaus of growing children. Both the tibial epiphysis and the metaphysis are apt to show grossly irregular ossification resulting in pronounced localized deformity, a metaphyseal beak, and a rather characteristic angular genu varum rather than diffuse generalized bowing. There may also be so-called back-knee and internal rotation of the lower legs. It is true that Blount, in his excellent, well-detailed article, reported an infantile form of the disease characterized by (1) medial wedging of the proximal tibial epiphysis, (2) a medially expanded, sometimes irregular epiphyseal line, (3) abrupt angulation just below the proximal tibial epiphysis, (4) a prominent, beak-like, recurring medial tibial metaphysis, and (5) cartilage islands within the beak. In his review of 28 cases of tibia vara, accumulated from his own and observations by others, Blount classified 20 of them in the infantile category. Tracings of roentgenograms of the knees are included, and only Blount's patient A. J. and Rall's patient in case 2 fail to show the gross, localized metaphyseal irregularity emphasized by the author. These two patients show instead the roentgenologic changes that we would like to regard as physiological. Interestingly enough, Blount *treated his patient A. J. only by observation, and the bowing disappeared spontaneously. It should be mentioned to the credit of Blount and others that the importance of differentiating true tibia vara from physiological bowing has been subsequently stressed. Clinically,* physiological bowing seems to be well recognized. Roentgenologically, there still is considerable evidence of confusion and uncertainty.

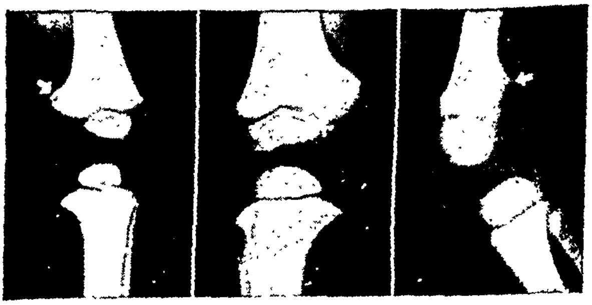

Fig. 4.—Normal variations in ossification as seen in the knees of three different patients with physiological bowing of legs. Such transient vagaries in development should not be construed to represent significant disease.

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4. Pugh, D. G.: The Roentgenologic [illegible] of Diseases [illegible], New York, Thos. Nelson & Sons, [illegible].

5. Barber, C. G.: Osteochondr[illegible] Tib[illegible] genol. 4[illegible]: [illegible]-502 (Oct.) 1939.

In 1942 Barber[6] again reviewed the subject of osteochondrosis deformans tibiae, emphasizing that it was the commonest cause of bowleg deformity in his community. He conceded that some of the infants with the condition recover spontaneously, but stated that "the roentgenographic features of the infantile type gradually change to those of the adolescent type, so that the two can be distinguished later only by the history." In the 14 patients whom we have followed, most of them with clinical and roentgenographic signs identical to those of Barber's patient W. R., no such thing has occurred, the changes having gradually regressed with normal growth. It is significant that, in the discussion of Barber's article, Blount pointed out that patient W. R. is a variant, implying that the condition is not true tibial osteochondrosis. He goes further to state that all patients of this type observed by him have recovered spontaneously.

As one reviews subsequent articles in conjunction with personal experiences during the past decade, it becomes increasingly obvious that many instances of nonrachitic bowleg deformity are being regarded as examples of Blount's osteochondrosis when, in all probability, they are not. Chapple[7] hints at skepticism similar to our own by illustrating roentgenographically the slight differences between what he calls a "normal" leg with poor weight-bearing alignment and so-called osteitis tibiae. Admittedly we do not have histopathological proof that metaphyseal and epiphyseal ossification in these patients is entirely normal, but circumstantial evidence is heavily in favor of it being normal, and there seems to be no recorded pathological evidence to the contrary. Actually, Blount reported the only biopsy evidence of defective osteogenesis in a case of osteochondrosis deformans tibiae. One has only to review his original article to recognize unmistakable differences in the roentgenologic appearance of this patient and that of the many examples of infantile bowing that, for one reason or another, have been erroneously included in this category. The chief differences are that in osteochondrosis one finds a more prominent, often blunted metaphyseal beak, areas of rarefaction within this beak, and localized irregularity of the metaphyseal contour.

It is becoming increasingly evident that there is great variability in the roentgenologic appearance of developing long bones in the growing child. Minor irregularities in the ossification of normal epiphyses are legion. Metaphyseal flaring, spurring, or beaking must be carefully defined and accompany more significant structural changes before they can be regarded as bona-fide evidence of disease. Thickening of cortical bone on the concave side of a curved tubular bone is roughly proportional to the extent of curvature; hence it must be largely a natural compensatory buttressing effect. Incidentally, thickness of the medial tibial cortex, as well as metaphyseal flaring and sloping, may vary greatly at birth, as shown by survey roentgenograms of 30 normal newborn infants obtained by us as part of this study.

Internal angulation of the distal tibial epiphysis and metaphysis may be more apparent than real as the result of improper positioning of the patient. Even when actually present, such angulation is thought to be another secondary manifestation of the bowed tibia and of doubtful clinical significance. Wiles[8] has discussed this "obliquity of the tibial epiphysis" from an orthopedist's viewpoint, stating that at times no cause can be found and that there is often spontaneous improvement with growth. A mild, localized chondrodysplasia has been considered as a possible cause of the changes in the distal tibia as well as those at the knee, but the absence of dwarfism and convincing, corroborative roentgenologic signs makes such an explanation unlikely.

One naturally wonders about the relationship of physiological bowing to prenatal bowing of the tubular bones resulting from mechanical pressure of other fetal parts in utero as described by Caffey.[9] In general, prenatal bowing is more sharply localized, is associated with soft tissue dimpling and congenital deformities of the hips or feet, is readily recognized in the neonatal period, and shows progressive improvement dating from birth. Despite these obvious differences, it may be that the intrauterine forces are at least indirectly responsible for determining the degree of physiological bowing. O'Connor,[10] among others, believes that some degree of internal tibial torsion is physiological in all newborn infants, and is a reflection of mechanical uterine pressure exerted upon the fetus in the position of comfort. He emphasizes that one cannot have internal tibial torsion without having associated bowing of the legs on weight bearing. Thus, one immediately perceives a plausible explanation as to cause and effect. If physiological internal torsion is accentuated, then physiological bowing will be similarly accentuated and both will persist beyond infancy. If the child is overweight or walks early, the bowing will be even more pronounced, and confusing secondary roentgenologic changes will occur.

Howorth[11] likewise points out that bowleg deformity in infancy is commonly associated with internal torsion of the tibias and cautions that, although the bowing usually corrects spontaneously, the torsion is apt to persist, producing intoeing. Although all of the 14 patients included in our study had some degree of intoeing that appeared to correct itself with growth, undoubtedly there are instances of bowing with persistent internal torsion that require orthopedic measures for correction. We do not presume to establish criteria for either operative or nonoperative correction of these deformities; we merely wish to emphasize the wisdom of considering the numerous examples of spontaneous regression that take place and to minimize the many normal roentgenologic variants that are often misinterpreted.

SUMMARY AND CONCLUSIONS

Exaggerated bowing of the lower extremities occurs with surprising frequency in apparently healthy, well-nourished infants and children. The deformity, usually

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6. Barber, C. G.: Osteochondrosis Deformans [illegible] Nonrachitic Bow Leg in Children, Am. J. Dis Child. 64:83[illegible] (Oct.) [illegible]2.

7. Chapple, C. C.: Orthopedic Pediatrics, in [illegible] E., editor, Mitchell-Nelson [illegible] Pediatrics, Philadel[illegible] Saunders Company, [illegible]

8. Wiles [illegible] Essentials of Orthopedics, Philadelphia, the Blakiston Company, [illegible]

9. Caffey, [illegible] Bowing and Thickening of the Tubular Bones with [illegible] Cutaneous Dimples in Arms and Legs: Congenital Sy[illegible] of Mechanical Origin, Am. J. Dis. Child. 74:543-562 (Nov.) 194[illegible]

[illegible] S. [illegible]: Pe[illegible] communication to the authors.

[illegible] B.: [illegible] of Orthopedics, Philadelphia, W. B. [illegible] recognized in the immediate postambulatory period, is generally not due to rickets, osteochondritis, or serious developmental fault. It is thought instead to be the result of delayed resolution of normal, physiological bowing that is present to some extent in all infants. In most instances the prognosis for complete, spontaneous regression of the bowing is excellent, the legs usually having straightened by the age of 4 or 5 years. Roentgenologic examination is imperative to rule out significant metabolic disease, but results of such examination may be misleading. Particular attention is directed to the confusing mechanical structural changes and exaggerated anatomic variants that are the result—not the cause—of the bowing.

BILATERAL ADRENALECTOMY FOR SEVERE HYPERTENSION

Ralph F. Bowers, M.D., Memphis, Tenn.

Medical management that employs diet, rest, drugs, and psychotherapy has proved to be quite satisfactory in the treatment of essential hypertension without organic changes. Sympathectomy has been extensively used when minimal organic changes appear. It has ameliorated symptoms but lowered the pressures to normal in a varying low percentage of the patients operated on, regardless of the extent of resection. It is attended with stage procedures and, even in the best hands, morbidity and mortality. This operation obviously leaves much to be desired. If it is used in the presence of extensive organic changes, morbidity and mortality rise in proportion to the magnitude of the organic changes. Consequently, operative treatment is sought for the group of patients in whom medical therapy has failed, sympathectomy has failed, or the organic changes are so extensive that sympathectomy cannot be safely considered. A considerable number of these patients are seen at Kennedy Hospital.

Green[1] and later Zintel and others[2] have employed bilateral partial adrenalectomy for this group with some degree of success. The profession accepts the fact that partial bilateral adrenalectomy is the procedure of choice in adrenal cortical hyperfunction (Cushing's disease). Priestley and others[3] have demonstrated that the ability to lower the pressure in this disease depends on leaving a small amount of adrenal tissue in the body. The adrenal is involved in adrenal cortical hyperfunction, but not in ordinary hypertension. It was decided to attempt a betterment of the fate of these patients by bilateral partial adrenalectomy, and a protocol was established for this investigation.

PROTOCOL

The indications for this operation are: (1) malignant hypertension that cannot be controlled by medical therapy, (2) chronic *hypertension with marked organic* changes, or (3) Cushing's syndrome. The patients are selected on the basis of the involvement of the four systems in arbitrary terms of 0 to 4+. Briefly, the majority of the patients are in the Smithwick 4+ group or beyond that if possible. All patients are considered by Dr. Fred Knox, the cardiologist, to be near the last year of their life, although prognosis in hypertension cannot be calibrated as definitely as this would intimate. Other competent physicians who have seen these patients agree with the general opinion of a state of desperation, as predicted by Dr. Knox.

Experience has taught us some pertinent facts about the indications. Marked arteriosclerotic changes, choked disk, and blindness are not contraindications. One survivor, who preoperatively could not distinguish light from dark, has recovered from total blindness and his choked disk has disappeared since the operation. Cardiac failure, if it can be temporarily controlled medically, is not a contraindication, regardless of the apparent severity. A few survivors had experienced episodes of coronary thrombosis preoperatively. Encephalopathy with confusion, memory defects, disorientation, and single or multiple cerebral vascular accidents are not contraindications. One survivor had experienced six "strokes" before operation. The one definite contraindication is the degree of function in the nephrosclerosing kidney. A few patients with poor kidney function were lost before its importance was clarified. Low concentration and particularly urea clearance below 50% of normal establish definite contraindication and, after two years' experience, show us that operation cannot be safely done. A study of the operative deaths reveals poor kidney function as a grave prognosis. It is correct to state that any hypertensive patient who can tolerate an operation of the magnitude of cholecystectomy and whose kidney function is not less than 50% of normal can survive the bilateral partial adrenalectomy in two stages, barring technical accidents, which with experience become rare indeed.

Preoperative care has been simplified. Ordinary preparation is all that is required for the first stage. The second stage required cortisone and desoxycorticosterone acetate (DOCA) therapy, much like that described by Huggins and Scott.[4] Attempts with different time levels finally suggested a 32 hour plan as follows. In preparation for operation on Wednesday at 8 a. m., for example, cortisone would be given, in 50 mg. doses, on Monday at midnight; on Tuesday at 6 a. m., 12 noon, 6 p. m.,

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From the General Surgical Service, Medical Teaching Group, Veterans Administration Hospital (Kennedy).

Read before the Section on *Surgery, General and Abdominal*, at the 102nd Annual Meeting of the American Medical Association, New York, June 2, 1953.

[1] Green, D. M.; Nelson, J. N.; Dodds, G. A., and Smalley, R. E.: Bilateral Adrenalectomy in Malignant Hypertension and Diabetes, J. A. M. A. **144**: 439-443 (Oct. 7) 1950.

[2] Zintel, H. A., and others: Subtotal Adrenalectomy in the Treatment of Patients with Severe Essential Hypertension, Ann. Surg. **134**: 351-360 (Sept.) 1951.

[3] Priestley, J. T.; Sprague, R. G.; Walters, W., and Salassa, R. M.: Subtotal Adrenalectomy for Cushing's Syndrome: A Preliminary Report of 29 Cases, Ann. Surg. **134**: 464-475 (Sept.) 1951.

[4] Huggins, C., and Scott, W. W.: Bilateral Adrenalectomy in Prostatic Cancer: Clinical Features and Urinary Excretion of 17-Ketosteroids and Estrogen, Ann. Surg. **122**: 1031-1041 (Dec.) 1945.

and midnight; and on Wednesday at 6 a. m., making a total of 300 mg. of cortisone. Five milligrams of desoxycorticosterone acetate should be given at 6:00 a. m. Wednesday. It is to be noted that the administration of cortisone and desoxycorticosterone acetate, as outlined above, has not elevated systolic and diastolic pressure in any patient beyond the top high pressures and has not brought about any deleterious effects, symptomatically or organically.

Method.—The operation usually requires two stages. The left side is operated on first, and a remnant of left adrenal gland about the size of the finger nail on the little finger is allowed to remain at the lower pole where the main vessels enter the gland. Viability of the remnant has been achieved in all except two patients who are regarded as having had total removal of the adrenals. At a later time, after two weeks to three months, depending on the condition of the patient and height of pressure, the right adrenal is totally removed. The plan involves function of the remaining stump after the second operation, when the hypoadrenal state is induced.

In this study, anterior abdominal (subcostal) incisions have been used. There was one bilateral adrenalectomy performed in one stage because of the desperate condition of the patient. The anterior incision permits palpation of both adrenals via the left subcostal incision, a desirable state in estimating the accuracy of the "no adrenal tumor case." The adrenal gland is anterior to the upper pole of the kidney, and it is easily available by these incisions. The operator can see the glands in entirety, and if they are fragmented during removal he can be certain that all fragments are removed, that only the desired amount of the left adrenal is left in place, and that it has a proper blood supply. Average operating time for the left side is 55 minutes and for the right side, 45 minutes. These time estimates include the entire operation including skin closure. The few technical errors are directly attributed to the inexpertness of the operator in the earlier cases. Two splenectomies were necessary because of injury to the splenic vein in the second and third cases. It is not necessary to place the patient in a bizarre position, and no ribs are removed.

Arbitrary Classification of Lesions in Twenty-Seven Cases

	System			
Intensity	Eye	Cardiovascular	Brain	Kidney
0	..	..	4	1
1+	2	7	6	10
2+	9	7	5	4
3+	12	11	3	10
4+	4	2	9	1
?	..	..	..	1

Most adrenalectomies are done via the posterior lumbar approach. Cahill,[5] the urologist, is an exception. Transfusions were administered in only two (technical errors) of the 27 cases. The loss of blood is minimal, and morbidity and mortality from the approach have been practically nil.

Postoperative Care.—The immediate postoperative care has been simplified, so that only cortisone, 50 mg. every six hours, is given, and, since the introduction of the 32-hour, second-stage preparation, no terrifying hypotensive episodes have been experienced. Patients now tolerate the second stage very much like an appendectomy. The pressures remain elevated, and, around the fourth to seventh day, reduction in cortisone dosage is started. The method varies from spacing the medication every eight hours, every 12 hours, or in reducing the 50 mg. dosage to 25 mg., and then, always watching for the hypoadrenal state, the dosage is lowered to 25 or 50 mg. per day. Often the blood pressure will lag in its reduction, compared to the reduction of cortisone dosage. Sometimes it is necessary to withdraw all cortisone medication, if the patient can tolerate it, to induce the desired normotensive condition. But the patient must be carefully observed and vigorously treated if hypoadrenalism appears in any marked degree. The incisions are usually thoroughly healed by the 15th to 21st day, when the patient is returned to the cardiology section for maintenance management. Wound healing is observed to be delayed but not markedly altered. Infection of the incision has not been observed except in one instance, and this was mild and it was easily and promptly corrected.

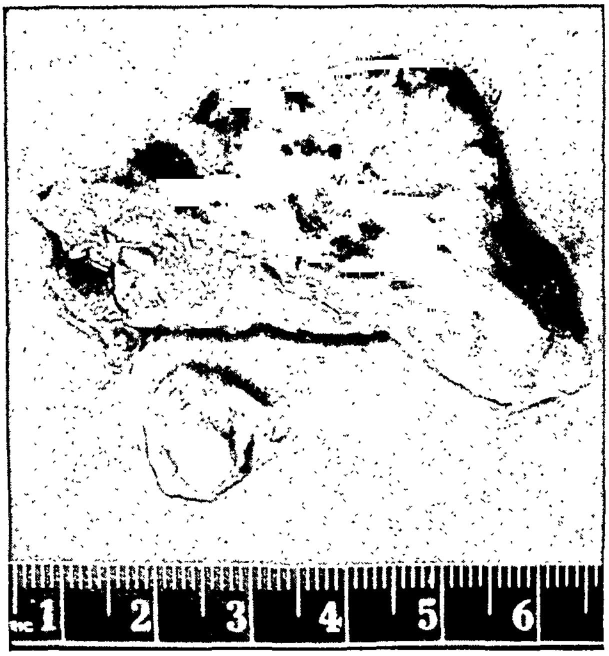

Fig. 1.—Normal adrenal removed at operation. The small fragment indicates the approximate size of remnant at lower pole of left adrenal.

Results.—An operation has been performed, or attempted, in 27 patients. Eleven were suffering from malignant hypertension, 15 had chronic hypertension, and there was one patient who had pituitary basophilism (Cushing's syndrome).

There were six postoperative deaths, and four patients have died after the postoperative recovery period. These deaths occurred at six and a half weeks, three months, five and a half months, and seven and a half months after the operation.

Twenty of the 21 survivors have shown a return to normal pressures, recorded when the hypoadrenal state was regarded as not significantly alarming. One of the patients who died later (case 1) showed a lowering of pressures from 230/130 to 190/110 mm. Hg. Although the pressures were lower than the preoperative levels, this patient is classified as failure as far as blood pressure reduction is concerned.

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[5] Cahill, G. F., and others: Adrenal Cortical Tumors, Surg., Gynec. & Obst. 62: 287-313 (Feb., no. 2A) 1936.

It must be borne in mind that any of these patients will undergo hypertensive states if large enough amounts of cortisone are given. Also the hypoadrenalism can be overcome by cortisone administration, but sometimes the desired lowering of pressure is not elicited. Obviously, it is the striking of a balance that involves mild nondistressing hypoadrenalism and at the same time permits normal or near normal blood pressures. A few patients are kept mildly hypertensive (170/100 mm. Hg) because it has been observed that they are greatly improved and live happier lives with this slightly elevated pressure. This, too, is a problem of the maintenance management.

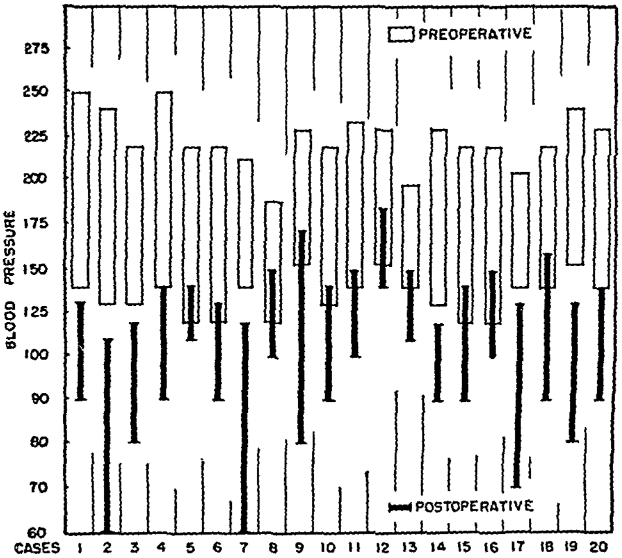

Fig. 2.—Systolic and diastolic pressure levels before and after operation.

ANALYSIS OF POSTOPERATIVE DEATHS

Deaths Occurring in the Immediate Postoperative Period.—Six patients died in the immediate postoperative period, as follows: 1. The patient died of uremia on the 13th postoperative day. Only the left side operation was performed. The patient had 26% urea clearance, which is now known to be a definite contraindication. 2. The patient died of hemorrhage 48 hours after emergency left side adrenalectomy. He had actinomycosis and bled profusely during 21 operations done previously for this condition. Systolic pressure was over the manometer range, and diastolic pressure was 160 mm. Hg. The [illegible] was hesitatingly performed. Death was due to b[illegible] dyscrasia described by hematologists as capillary [illegible]agility. [illegible] The patient died [illegible] hours after the second sta[illegible] operation. Autopsy revealed softening of the [illegible] marked nephrosclerosis, and cardiac hyper[illegible]hy. The[illegible] was possi[illegible] [illegible]renal insufficiency, [illegible] ed to be due t[illegible] [illegible]bral accident. 4. [illegible] a "jelly [illegible] [illegible]rain 12 days a[illegible] first stage [illegible] [illegible]ing malignant hypertension (2[illegible] [illegible]edication failed to control. Death was due to respiratory failure. 5. The patient was a paraplegic with malignant hypertension, controlled medically by veratrum viride (Vertavis) given intravenously. This medication would bring the comatose patient to the point of almost normal lucidity. Bilateral partial adrenalectomy was performed in one stage. Death was due to uremia, and autopsy revealed glomerulonephritis. 6. The patient died on the ninth postoperative day after first stage of paralytic ileus, small retroperitoneal hematoma, nephrosclerosis, and marked arteriosclerosis. This is the only patient of the postoperative group whose death was thought to be unlikely.

Four of the six postoperative deaths occurred after the first stage. No technical error was thought to be responsible. This suggests that these four patients could not tolerate any surgical procedure, except of the most minor nature. The paraplegic patient was regarded as in an extremely desperate state, and no observer thought that he could be saved. The response to veratrum viride showed that an emergency operation was necessary to give the patient even a chance for survival.

In case 1 there was an early violation of a now known contraindication. The death in case 6 was the only surprise in this group. The small retroperitoneal hematoma was not large enough to cause fatality. It can be conjectured, however, that its presence contributed to the paralytic ileus.

Deaths Occurring After Period of Postoperative Recovery.—Four patients died after the period of postoperative recovery, as follows: 1. Death occurred four weeks after the second stage of the operation. It was necessary to perform an emergency gastric resection for bleeding duodenal ulcer after first stage. The second stage was accomplished easily. The patient showed signs of mild hypoadrenalism and encephalopathy, and autopsy revealed marked arteriosclerosis, suppurative pericarditis, cerebral softening, and nephrosclerosis. 2. Death occurred six weeks after the second stage of the operation. Hemorrhoidectomy was successfully performed for bleeding after the second stage. The patient was doing well when the physician in charge became ill. An inexperienced physician could not cope with the adrenal insufficiency that caused death. 3. Death occurred five and a half months after the second stage. The patient was an exceedingly poor risk, with marked organic changes and kidney function 40% of normal. Maintenance management was difficult, but it was accomplished. The patient was sent home, and the physician's inability to cope with the hypoadrenal state resulted in death due to adrenal insufficiency. 4. This patient was suffering from malignant hypertension. The patient did exceedingly well and was discharged one month after the second stage receiving 6.25 mg. of cortisone daily. The patient returned to his regular work. Virus pneumonia developed that caused his death in a distant hospital seven and a half months after operation. Adrenal insufficiency probably contributed to his death.

MAINTENANCE MANAGEMENT

Maintenance management is an important phase of the study, and it is directed by Dr. Knox, the cardiologist, who is presently preparing a manuscript that describes the therapy in detail. Briefly, it involves the administration of cortisone, desoxycorticosterone acetate, aqueous and lipoid adrenal extract, correction of electrolytic imbalances, and digitalis. Some apparent paradoxical phenomena are observed. For instance, cortisone therapy must be given in spite of renal involvement with hyperpotassemia, although this chain of circumstances usually contraindicates cortisone therapy in the patient who has not had adrenalectomy.

Two things are absolutely necessary for patients who are in the postoperative stage. A hospital bed must be available for the patient when the abnormal hypoadrenal stage appears, and secondly, a physician who understands the management of the hypoadrenal state must be on hand. Patients can live a long distance from the hospital, if they or their family are intelligent enough to seek the aid of the family physician. Patients and family physicians are oriented as to early signs of trouble. Several patients are handled through some of the milder episodes by the family physician. It is believed that the small remnant of left adrenal tissue serves as a measure of safety, which permits a time margin for safety not always present in the patient who has undergone total adrenalectomy.

The management of these patients is not so difficult as that of patients who have crises of Addison's disease. Certain prodromal symptoms serve as a warning. Anorexia, weakness, nausea, and vomiting in that order are usually evident when the hypoadrenal state is threatening. These patients have not shown the sudden hypotension, collapse, and coma of patients with Addison's disease. These patients do not show hypotension until the four cardinal prodromal symptoms have been present, for from 12 hours to 2 days. One difficulty in orientation revolves around the fact that the hypoadrenal novice physician wants to wait until the pressure is distinctly subnormal before elevating cortisone therapy. This causes much trouble and considerable work in addition to involving danger. The time to elevate the cortisone dosage is when the anorexia, weakness, nausea, and vomiting first appear, regardless of the level of the blood pressure readings.

All survivors have shown marked symptomatic improvement of their hypertensive symptoms. Choked disks disappear, other eye ground changes do not advance, hearts return to normal size, cerebral manifestations are bettered, but no patient has shown improvement of impaired renal function. It can be accurately stated that no survivor has shown a noticeable advancement of the hypertensive organic changes. While there has been no improvement in kidney function, our studies have not shown added kidney damage in any survivor. Some of the patients have been followed for 22 months after operation. Organic changes may again progress as time passes. Nevertheless, it is gratifying indeed to observe patients in apparent good health walking around the hospital visiting friends when, according to the natural course of their disease, many of them should have been dead for months, if not a year or more. It is also admitted that with the passage of time, hypertensive states may be resumed. Observations of this nature are a part of this investigation, and the progress of these patients will be reported when more postoperative time is gained.

The operation could hardly be expected to return these very ill patients to heavy laboring work. Four patients are doing regular work, six are doing light work, and eight have not been able to resume work of any kind, but all of these patients have had to stop work for varying periods of time before the hospitalization that precipitated the operation.

SUMMARY AND CONCLUSIONS

Experiences with bilateral partial adrenalectomy for severe hypertension are briefly discussed. There were six postoperative deaths in the immediate postoperative period. Five can readily be classified as extremely desperate cases. The sixth patient who died had been expected to survive. This operative treatment has effected normal pressure in 20 of the 21 survivors. In this one patient, although lowered pressures were experienced, the pressure was not lowered sufficiently to be classed as normal, and he is thereby regarded as a therapeutic failure. Some of the patients have been followed for as long as 20, 21, and 22 months. Symptomatic improvement of hypertensive symptoms was obtained in all survivors. Hypoadrenalism was present in all.

Bilateral partial adrenalectomy will lower blood pressures in nearly all patients (20 out of 21) to a normal level, for as long as 22 months after the operation, if a small enough piece of adrenal tissue remains. This is gained at the expense of controllable adrenal insufficiency. The balancing of these states achieves quite satisfactory results, but the maintenance management is difficult, tedious, and not without danger.

Experience with these 27 cases plausibly permits these suggestions: 1. Indications are known and can be fairly accurately estimated. 2. The preoperative and immediate postoperative care are easily and safely established. 3. Operation by the anterior abdominal approach permits accuracy, is not difficult for the operator accustomed to gastric or pancreatic surgery, is not time consuming, has not been attended with many technical errors, and appears to be safe. 4. The only phase of this investigation that denies the procedure the dignity of being routinely accepted is the maintenance management. I believe that, with the present hormonal substitutive drugs, the reasonable hope for better agents in the future, and the skill of the 1953 medical workers, the dangers can be successfully overcome.

Park Ave. and Getwell St. (15).

Duodenal Ulcer in Children.—Clinical studies suggest that many adult duodenal ulcers originate during childhood and may be cured by careful treatment. Recurrent abdominal pain in children must not be brushed off with the casual diagnosis of "interval appendix," food allergy, constipation, or mesenteric adenitis, for it would unnecessarily delay recognition of the presence of a duodenal ulcer. . . . The most common symptom complex in children is made up of abdominal pain, nausea and vomiting, though they vary with age. In the [illegible] period the findings may be climaxed by melena and perforation, with death supervening with such rapidity that diagnosis of its cause may not be [illegible] in time. Bleeding and [illegible] are common at the two-[illegible] level, but beyond [illegible] bleeding becomes less frequent. In the older [illegible], gastric upsets and abdominal pain [illegible] the most common symptoms.—F. K. Alexander, M.D., [illegible] Clinical Medicine, October, 19[illegible].

J.A.M.A., Jan. 30, 1954

SPONDYLOLISTHESIS

ANALYSIS OF TWO HUNDRED ONE CASES

Paul C. Colonna, M.D., Philadelphia

Spondylolisthesis was previously regarded as a condition of rare occurrence. Only 125 cases were reported before 1900, and all but 6 of these were reported by obstetricians! This report deals with 201 cases observed in the Department of Orthopaedic Surgery at the University of Pennsylvania and is an index of the frequency of the condition, which represents approximately 1.25% of all the patients treated in the clinic during the past 10 years.

ANATOMIC CONSIDERATIONS

Spondylolisthesis is produced as the result of a defect between the inferior and superior articular surfaces of the neural arch. This defect is accompanied by a displacement of the vertebral column. Usually it is recognized clinically only when it is severe. The condition of spondylolysis—a separation of the neural arch without slipping—must be of common occurrence and frequently overlooked even in routine roentgenographic examinations. The commonest site of displacement is at the lumbosacral joint. The defect in the pars interarticularis of the fifth lumbar vertebra is commonest, the next in frequency being the fourth lumbar vertebra. At these two sites at least 95% of the cases of spondylolysis and spondylolisthesis occur. Undoubtedly, many of these patients, without slipping and with mild displacement, go through life with the condition unrecognized.

Many observers believe that these isthmic defects are of congenital origin and that they are produced by nonfusion of anomalous ossification centers in the neural arch. Certain facts, however, refute these assumptions.

It must be remembered that the roentgenograms of this area in newborns and infants cannot shed much light on this question because of the extensive cartilaginous structure. The opportunity for gross anatomic study in a large series of stillbirths and young infants is not great, but a study of the embryology might be expected to give some information on the development of the principal ossification centers.

Three principal centers of ossification are found in the normal development of the lumbar vertebrae. One is on each half of the neural arch; the vertebral body develops from the other. There are also five secondary centers of ossification that need not be considered in this discussion as they make up the upper and lower plates of the body, the tips of the two transverse processes, and the tip of the spinous process. The primary centers appear at about the eighth week and fuse posteriorly at term or during the first year of infancy. Failure of fusion of the primary centers gives rise to a number of congenital anomalies that have been ably pointed out by Willis.[1] The neural arch normally fuses to the vertebral body from the fourth to the sixth year.

It has been estimated by a number of observers that neural arch defects occur in between 5 and 6% of the total adult population; this is considerably higher than found in our series. If this is true, one would expect to find spondylolysis or spondylolisthesis at autopsy of infants in at least the same proportion as in the adult population, provided the congenital basis for its formation is accepted. Also, it would be logical to assume that many of the cases of this condition, if of congenital origin, might well present other well-recognized congenital lesions of the musculoskeletal system. Statistically, however, the neural arch defects in this study were not accompanied by congenital anomalies in other parts of the body.

Kilian [2] is given credit for first calling attention to this condition, but the most complete description was by Neugebauer [3] who considered its origin to be congenital. The splendid paper by Rambaud and Renault [4] in 1864 states definitely that each lateral half of the neural arch arises from two centers of ossification and that congenital lack of fusion of these centers is the primary cause of the neural arch defect. Today most anatomists and embryologists feel this thesis is incorrect. Mall,[5] in a series of 60 embryos less than one day old, found no evidence of accessory centers in the neural arch, and it is generally agreed today that the lateral half of the neural arch arises from only one center of ossification. Chandler's [6] observation in 1931 on a series of 19 embryos failed to reveal evidence of more than one ossification center for each half of the neural arch. Batts [7] reported, in 1939, from a study of 200 fetal spines that he did not find a single instance of a double ossification center for the lateral half of the neural arch at either the fourth or fifth lumbar vertebra.

Hitchcock,[8] in 1940, examined 90 fetuses and found only one center of ossification in this area. He did, however, find the original isthmic defect both with and without slipping of the vertebral bodies. He concluded that this isthmic zone is one of great potential weakness, for its consists largely of cartilage until after birth. He also found out that this area is occupied mostly by a large lake of blood vessels, almost sinusoidal in character. These data rest on his study of stillborn and infant cadavers. Interestingly enough, he could produce, by hyperflexion of the spine and a moderate degree of force, a fracture of the neural arch at the isthmic area in the

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From the Department of Orthopaedic Surgery, University of Pennsylvania.

Read before the Section on Orthopedic Surgery at the 102nd Annual Meeting of the American Medical Association, New York, June 3, 1953.

[1] Willis, T. A.: Analysis of Vertebral Anomalies, Am. J. Surg. **6**: 163-168, 1929; Separate Neural Arch, J. Bone & Joint Surg. **13**: 708-721, 1931.

[2] Kilian, H. F.: De Spondylolisthesi Gravissimae Pelvangustiae Caussa nuper Detecta Commentatio Anatomicoobstetricia. Bonn, 1854, quoted by Willis.[1]

[3] Neugebauer, F. L.: New Contribution to History and Etiology of Spondylolisthesis, London, the New Sydenham Society, 1888.

[4] Rambaud, A., and Renault, C.: Origine et développement des Os, Paris, 1864, quoted by Willis.[1]

[5] Mall, F. P.: On Ossification Centers in Human Embryos Less Than 100 Days Old, Am. J. Anat. **5**: 433-458, 1906.

[6] Chandler, F. A.: Lesions of "Isthmus" (Pars Interarticularis) of Laminae of Lower Lumbar Vertebrae and Their Relation to Spondylolisthesis, Surg., Gynec. & Obst. **53**: 273-306, 1931.

[7] Batts, M., Jr.: Etiology of Spondylolisthesis, J. Bone & Joint Surg. **21**: 879-884, 1939.

[8] Hitchcock, H. H.: Spondylolisthesis: Observations on Its Development, Progression, and Genesis, J. Bone & Joint Surg. [illegible]

lower lumbar region. This, it would appear, is highly important. Both bilateral fractures at the pars interarticularis area and unilateral cartilage defects could be produced. The latter was obtained with flexion, lateral bending, and torsion of the body. From this, it can be surmised that a fracture can occur at the weakest part of the neural arch during birth. Hyperextension failed to produce this finding. It would appear reasonable, therefore, to assume that the position of the infant during delivery is one factor of importance in producing spondylolysis.

Other observers, including Friberg[9] and Harris,[10] have made many important contributions to this subject. It has been shown that the isthmic defect may later go on to actual slipping of the vertebral body, with or without subsequent trauma. Why this does not occur more frequently in adult life may be due to an osseous barrier that produces some fixation. This may develop in those cases in which there are localized arthritic changes or narrowing of the intervertebral space as noted in certain adults with spondylolysis. This, however, fails to explain very satisfactorily why the signs and symptoms are usually delayed until adulthood before giving rise to disability, if one considers displacement as the primary factor in producing backache.

There are causes other than a defective neural arch that produce a displacement of the vertebra. Roche[11] recently pointed out that destructive disease of the interarticular facet area would permit some slipping forward of the entire vertebra without any defect at the isthmus. Macnab[12] calls attention to the fact that subluxation at the interarticular facets may produce in flexion a degree of actual forward displacement of the whole vertebra. He reports the clinical findings in 22 patients and does not regard Junghann's term pseudospondylolisthesis particularly satisfactory. This slipping forward usually affects the fourth lumbar vertebra and occasionally gives rise to neurological pressure symptoms in the lower extremities.

SIGNS AND SYMPTOMS

Persistent back pain accompanied by stiffness, with or without referred pain, is usually the chief complaint. This back pain may be, and frequently is, accompanied by radiating pain into the buttocks and down into either groin or both legs, but there are instances of spondylolisthesis combined with disk protrusion without any back pain, the pain being wholly confined to the extremities. In this series, there were two patients with a combined disk protrusion and spondylolisthesis. Severe neurological changes are unusual in cases of neural arch defects alone. One of the patients mentioned had both a structurally weak back and protrusion of an intervertebral disk. He became symptom-free after disk removal and spine fusion. No case of paralysis of the lower extremities was found in 201 patients, although Ryerson[13] reported such a case in a patient who recovered after spine fusion alone.

In most instances, the low back pain will disappear when the patient becomes recumbent. In a few instances in this study, however, the pain and discomfort were aggravated by this position. Long periods of standing or sitting were frequently definite aggravating factors. In a number of patients, these were dramatically relieved by spine fusion.

There was a history of definite trauma in 45 patients, but in 156 no specific injury appeared to have initiated the symptoms. Caldwell[14] cites the history of trauma in 50% of his patients, but, in my group, somewhat less than 25% of the total gave a history indicative of any specific injury. I feel that trauma in adult life is very rarely an initiating factor, but it may be an activating factor in increasing the disability. The most severely disabled patients were those who had severe spondylolisthesis in which arthritic changes in the posterior region of the vertebral body and/or an increased lumbosacral angle were combined. These patients walked awkwardly and complained not only of constant low back weakness but of a severe "bearing down" pain.

The condition occurred most frequently between 30 and 60 years of age in this series. Out of the 201 patients, 195 were over 40 years of age (table 1), a figure somewhat at variance with many reports. Analysis of the statistics in regard to male and female patients indicates slightly more males (106) than females (95), although Meyerding,[15] in 1940, found that 78.8% of his patients were males and 21.2% were females.

TABLE 1.—*Age Distribution in 106 Males and 95 Females with Spondylolisthesis or Spondylolysis*

Age, Yr.	No. of Patients
10-20	21
20-30	28
30-40	46
40-50	31
50-60	46
60-70	20
70-80	9
Total	201

It becomes apparent that spondylolysis may be unrecognized throughout life. In the patients with spondylolisthesis, the effects can vary from a very slight disability to severe back and radiating pain and almost complete disability. In analyzing the total of 201 patients, spondylolisthesis was found seven times oftener than spondylolysis. Probably this is because patients with the latter are frequently symptom-free and the condition is unrecognized and not diagnosed unless a very careful study of the roentgenogram is made.

ROENTGENOGRAPHIC EXAMINATION

It is axiomatic to say that good bone detail is essential for accurate interpretation in patients with low back pain and who are suspected of having spondylolisthesis or spondylolysis. The anteroposterior, lateral, and oblique views should be taken routinely, and the 35 degree angle view of the lumbosacral joint as described by Caldwell[14] is frequently helpful, in addition to the routine 45 degree angle view. The diagnosis of spondylolysis can rarely be made without oblique roentgenograms (fig. 1), while the lateral view of the suspected area is necessary to determine the degree of vertebral body displacement (spondylolisthesis). While the defect in the neural arch usually occurs at the fourth or fifth lumbar vertebra, a unilateral or bilateral neural arch defect, with or without displacement, may be found at other levels. It has been helpful to try to visualize, in the oblique films, a duck's head, neck, and body when the film is held horizontally or a dog's head, neck, and body when the film is held vertically. If an area of separation can be identified between the head and body through the isthmic area, it corresponds to a lack of bony continuity in the pars interarticularis. This method may aid quick identification of the point of weakness.

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[9] Friberg, S.: Studies on Spondylolisthesis, Acta. chir. scandinav. (supp. 55) 82: 1-140, 1939.

[10] Harris, R. I.: Spondylolisthesis: Hunterian Lecture, Ann. Roy. Coll. Surgeons England 8: 259-297, 1951.

[11] Roche, M. B.: Pathology of Neural-Arch Defects: Dissection Study, J. Bone & Joint Surg. 31A: 529-537, 1949.

[12] Macnab, I.: Spondylolisthesis with Intact Neural Arch—So-Called Pseudo-Spondylolisthesis, J. Bone & Joint Surg. 32B: 324-333, 1950.

[13] Ryerson, E. W.: Recurrent Spondylolisthesis, with Paralysis: Bone-Splint Transplantation, J. A. M. A. [illegible]: 24-25 (Jan. 2) 1915.

[14] [illegible] A.: Spondylolisthesis: Analysis of 59 Consecutive Cases, Ann. [illegible] 485-497, [illegible]

[15] [illegible] H. W.: Spondylolisthesis, J. Bone & Joint Surg. 13: 39-48, [illegible]

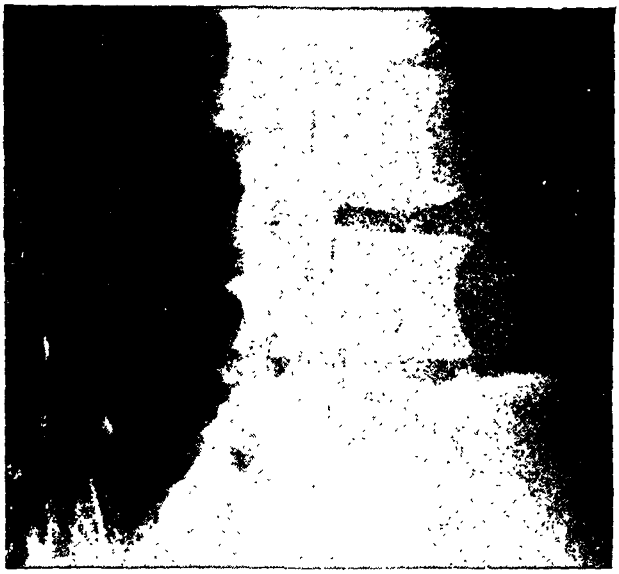

Fig. 1.—Roentgenogram showing oblique view of spine. Note wide space between fourth and fifth lumbar vertebrae.

The severer grades of slipping in this study all occurred at the fifth lumbar and first sacral vertebrae. Spondylolisthesis occurred at the lumbosacral area in 130 and at the fourth and fifth lumbar vertebrae in 39 patients (table 2). In two cases, there was double spondylolisthesis involving the fourth on the fifth lumbar and the fifth lumbar on the first sacral vertebra. Spondylolysis occurred at the fifth lumbar vertebra in 19 patients and at the fourth lumbar vertebra in 5.

Arthritis sometimes develops locally as shown by spurring and a narrowing of [illegible] space, with or without displacement. This appears [illegible] local back stiffness and pain. Th[illegible] particularly noted on the posterior portion of the body near the intervertebral foramina. Along [illegible] roentgenographic findings, [illegible] the course [illegible] sacral [illegible] factor [illegible] back pain in these cases [illegible] angle. This necessarily inc[illegible] the soft tissues in this area. Even with mild displacement of the vertebral body the patient may suffer extreme disability. If, therefore, there is a combination of localized arthritis and an increased angulation at the lumbosacral joint, the patient may have considerable pain even though there is very slight slipping demonstrable. The study revealed, therefore, that the degree of spondylolisthesis is not the only basis for selecting cases for initial surgery. Other conditions have also been found with pars interarticularis defects, notably back pain from a metastatic lesion involving a low lumbar vertebra.

TREATMENT

While this structural defect affects the low back to produce a mechanical instability, it is important to mention that the great majority of patients in this study were relieved without surgical fusion. Of the 201 cases, surgery was resorted to in only 29, or 14.4%. One may assume that a few of the patients were only temporarily relieved of their stiff and painful back and may have applied for surgery elsewhere. The majority, however, were indefinitely relieved by postural exercises, with or without adequate back support, and this was so recorded in their follow-up period. Very careful attention should be given the patient regarding methods for lessening the postural stress and strain on the unstable back by forms of conservative treatment.

Nonsurgical Treatment.—Nonsurgical treatment includes converting a soft mattress into a firm one, fitting the patient with a good canvas support or Knight type of back brace, instructing the patient in the use of local heat and massage, avoiding a slumping position, improving posture by exercise, and prohibiting lifting and back twisting occupations. All of these measures should be considered in advising and relieving these patients. Attention is called to the fact that in 24 patients with spondylolysis and in many with spondylolisthesis it was not necessary to surgically fuse the spine. For example, a 30-year-old man with well-marked spondylolisthesis (fig. 2) complains of only a moderate degree of pain. His work is not of a laboring type, and he suffers only minimum discomfort. Although he has no arthritis or increase in the lumbosacral angle at this time, he is a potential candidate for fusion of the spine.

TABLE 2.—*Degree and Location of Spondylolisthesis in 177 Patients*

Degree	No. of Patients
1	115
2	40
3	12
4	5
Location	
L_5	130
L_4	39
L_3	5
L_2	1
L_4-L_5-S_1	2

The use of local injections in these cases of spondylolysis or spondylolisthesis is illogical. Their use should be condemned.

Efforts at reducing the displacement in patients with spondylolisthesis were to no avail. It cannot be denied that reduction can be partly accomplished in certain cases, but it requires a great deal of effort and endurance on the part of the surgeon and the patient. The reduction is difficult or impossible to maintain with conservative treatment. A temporary reduction by traction may in rare instances be obtained roentgenologically, but usually a recurrence of the slipping occurs even during the convalescing period. Satisfactory reduction is so unpredictable and surgical fusion of the vertebra above and below the defective one, without attempting reduction of the displacement, is so satisfactory that I have discarded any attempt to reduce the vertebral body displacement at or preceding surgery. A history of continued local pain after adequate conservative treatment should influence a decision in favor of operation.

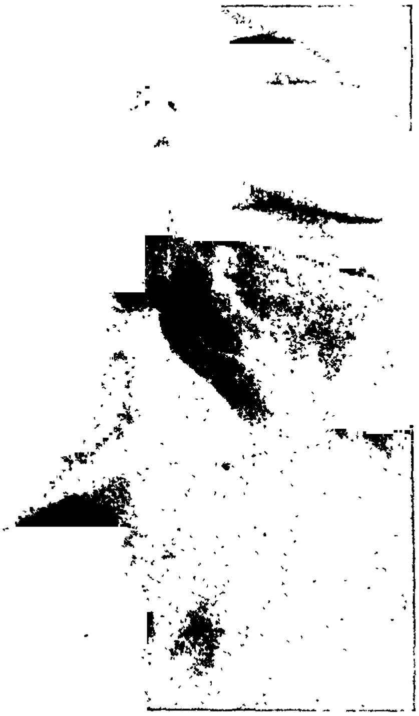

Fig. 2.—Roentgenogram showing definite spondylolisthesis.

Operative Treatment.—Various efforts have been made to operate through an anterior approach, and occasionally successful reports of this have appeared in the literature. In the present study, the posterior approach was used in all the 29 patients chosen for surgical fusion, fusing one vertebra above and one below the one affected (fig. 3). About 50%, or 14, of the patients presented only grade 1 slipping. All of these had severe low back pain for months or years and in spite of conservative treatment had not been relieved (table 3). There were 14 males and 15 females in this series, 6 of whom were 20 years of age or under, the youngest being 11 and the oldest 75.

In the majority of cases, the Hibbs type of fusion, reinforcing the bone chips with a graft from the tibia or iliac bone, was used. A review of these 29 cases is shown in table 3.

The postoperative care followed a rather routine course. There were no operative infections. Plaster immobilization was not employed in any of the fusions [illegible] the lumbosacral region but was employed for a few weeks in those cases in which fusion occurred at a higher level in the lumbar region. The patients were all measured for Knight spinal braces at the end of the sixth week but usually stayed in bed for about seven weeks after operation. They were then gradually gotten up while wearing the brace and were allowed on their feet a few days later. They were encouraged to have short periods of activity using a walker. After 5 to 10 days in the walker, they were able to discard all support except the back brace. This they wore for a minimum of six months.

TABLE 3.—*Summary of Twenty-Nine Patients with Spondylolisthesis for Which Surgical Treatment Was Given*

Site of Lesion	No. of Patients
L_3-L_4	1
L_4-L_5	9
L_5-S_1	19
Type of Procedure	
Hibbs' plus iliac bone	17
Hibbs' plus tibial bone	9
Hibbs' plus bone from bank	1
Hibbs' alone	2
Results of Operation *	
Excellent (patient symptom-free with normal activity and bony union)	20 (71.4%)
Good	5 (17.9%)
Fair	2 (7.1%)
Poor	1 (3.5%)

* One patient died from a brain tumor one month after surgery and is not included in these statistics.

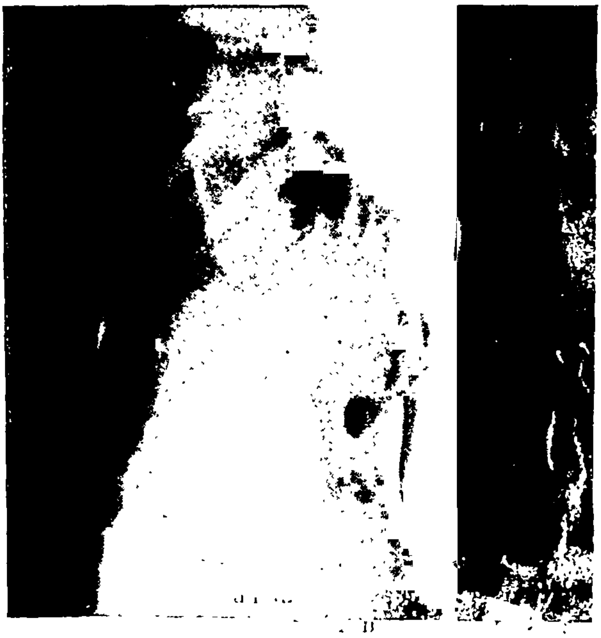

Fig. 3.—Roentgenogram [illegible] forward displace[illegible] lumbosacral arthritis, and increase in [illegible], characteristic features that made operation imperative. [illegible] after many years of low back disability and occasional [illegible] to the lower extremities, became symptom-free after operation. Note [illegible] present posteriorly one year after fusion of [illegible] sacral vertebrae.

If at [illegible] that [illegible] by [illegible] in [illegible] lighter [illegible] support [illegible] gradually returned to [illegible] Follow-up periods have ranged from six months to 12 years, and as table 3 shows 20 had excellent results. By this is meant the patient was pain-free, wearing no support, and was physically active and the roentgenogram demonstrated solid bony union.

SUMMARY AND CONCLUSIONS

Two hundred one cases of spondylolisthesis or prespondylolisthesis (spondylolysis) are reviewed. The evidence favors the belief that the condition is initiated by trauma at birth but that the activating element producing disability can often be trauma in adult life. Conservative treatment can relieve the great majority of cases and should be given an initial trial in all patients except those with severe spondylolisthesis. Disability depends partly on the vertebral body displacement, although local arthritic changes and increase in the lumbosacral angle are contributing factors. Surgical fusion was the treatment of choice in 29 cases; the posterior approach was routinely employed. The Hibbs technique, reinforced with iliac or tibial bone grafts, was employed in all but 3 out of 29 patients. The results of surgery were excellent in 20 patients.

3400 Spruce St. (4).

HEXAMETHONIUM SALTS AS AN AID TO THE ORTHOPEDIC SURGEON

Ranald J. M. Steven, M.D.
and
Ralph M. Tovell, M.D., Hartford, Conn.

The time has come when the whole philosophy of the use of hexamethonium compounds must be thought out and expounded. Enough experience has been gained for us to define more clearly the circumstances under which they can be used, the contraindications to their use, what results may be reasonably expected of them, and the precautions that experience teaches us must be taken in their use If some of these tenets have been neglected in the use of these compounds, that is no good reason for their abandonment for all except major operative procedures. It is our belief that in these compounds we possess agents with a wide range of usefulness that should not be brushed aside hastily. Far too little is known of their mode of action on the various systems of the body for them to be dismissed entirely as too dangerous for clinical use. Since the clinician has far outstripped the research worker, it is to our advantage to utilize the results of clinical investigation.

This may be termed heretical thinking, but let us take an example from another field. There have been recently a mounting number of reports of fatalities due to diarrhea, almost choleric in degree, in patients receiving antibiotics, mainly a combination of penicillin and streptomycin although also after administration of others. Many patients have recovered after the administration of antibiotics has been stopped, and still others, in whom the diarrhea was due to resistant hemolytic staphylococci, have been cured by the use of chloramphenicol (Chloromycetin). These fatalities have not led to an insistent demand that antibiotics be discarded as dangerous drugs, but they have led to a plea for their wise, more cautious use. We should have the same attitude toward the hexamethonium compounds.

The use of these drugs to produce postural hypotension in patients undergoing operations where such a method, though of advantage, is not essential to surgical success should be undertaken only when the patient fulfills all the criteria of fitness usually demanded for their use. To limit their use entirely to patients undergoing major radical operative procedures that are otherwise almost impossible surgically, is to deny both the patient and the surgeon the benefits of agents that are not, in our opinion, as dangerous in skilled hands as some would have us believe.

CRITERION OF USE

The major criterion for their safe use is that the patient must have a normal blood volume. Deviations of the blood volume from normal either in the direction of polycythemia or hypovolemia with anemia must be corrected prior to any operative procedure in which the use of hexamethonium compounds is contemplated. While some of the patients in the series to be presented had an estimation of their blood volume, in others the hematocrit was accepted as an adequate guide to their status.

CONTRAINDICATIONS

Contraindications to the use of hexamethonium compounds are, with one or two important exceptions, those conditions that accompany the process of aging. Arteriosclerosis manifested in any form, by either evidence of myocardial ischemia or failing cerebral function or a history suggestive of a previous cerebrovascular accident, particularly cerebral thrombosis, forbids the use of these compounds. It must be remembered that the condition of the peripheral arteries is a poor guide to the condition of those vessels supplying vital organs. During operative procedures, a patent airway with full oxygenation and rapid replacement of blood lost is essential. The presence of shock is another contraindication to their use. Relative contraindications include poor renal function, hypotensive states, and childhood. Some patients who become mildly hypotensive after the induction of anesthesia but who continue to bleed may cease to bleed after a small dose of a hexamethonium salt, although the blood pressure may not be lowered further by such a dose.

The production and maintenance of a relatively bloodless field can contribute greatly to the ease and success of operations that are dependent on accurate anatomic visualization of the structures involved for the production of satisfactory results. It may be argued by those who oppose the use of this method under these circumstances

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that these operations were performed successfully prior to the introduction of hypotensive methods. This is true, but they were frequently prolonged and accompanied by considerable blood loss with accompanying shock. It is the aim of every anesthesiologist to give each patient the best possible care. It is our belief that the proper use of these agents is to advance such an aim.

BASIS OF REPORT

This report is based on the use of hexamethonium compounds in 91 major orthopedic operations out of a total of over 200 operative procedures in which postural hypotension was successfully used and in which results were essentially the same. This series is composed of 28 operations on the hip joint and femur including 14 Judet arthroplasties, 40 spinal fusions, 1 removal of a Wilson plate from the lumbosacral spine, and 22 operations around the shoulder joint including 6 Putti-Platt procedures for stabilization of recurrent dislocations of the shoulder joint. The age of the patients included in this study varied from 5 to 74 years.

The average operative time for a Judet arthroplasty was 131 minutes, ranging from 95 to 165 minutes. The average time for the series of spinal fusions was 142 minutes, ranging from 105 to 220 minutes. The average time for the operations about the shoulder joint was 113 minutes, ranging from 90 to 135 minutes. The dose of the hexamethonium compounds that was used in these patients was progressively reduced. Early in this series, the majority of patients received 50 to 100 mg. of hexamethonium ion to produce postural hypotension; one patient received 200 mg. An increasing number of reports of tragic accidents probably due to profound, prolonged hypotension combined with evidence of extreme susceptibility of a limited group of patients led to the use of a small test dose of 3 to 5 mg. for all procedures. This was found frequently to be sufficient to produce postural hypotension. Further small doses, of a like order, were administered as required. Contrary to previous reports that stated that repeated doses were usually ineffectual, a satisfactory hypotension was maintained by this method. Many patients in the latter part of the series received a total of not more than 25 mg. It was possible by this usage to maintain the systolic blood pressure at approximately 80 mm. Hg, which we feel is a safe and satisfactory level. If hemostasis was not achieved at this level of blood pressure, the method was abandoned.

RESULTS OF STUDY

It was most difficult to improve working conditions around the hip joint because of the difficulty of elevating this area above the rest of the body with the patient in the supine position. This is reflected in the data showing the number of patients in each group requiring blood transfusions during or after the operative procedure. Of the 14 patients undergoing Judet arthroplasties, 10 received 500 cc. of whole blood, 2 received 1,000 cc. of whole blood, and 2 did not have transfusions. Of the 40 patients undergoing spinal fusion, 20 received blood transfusion of 500 cc. and 7 received 1,000 cc. of whole blood. The remainder did not require transfusion. Included among the 40 patients undergoing spinal fusion were 15 children aged 12 to 18 years. Most of them had an extensive fusion of 6 to 10 vertebrae to correct severe kyphoscoliosis. Many of these patients were in complete body casts. In these a small window was cut in the back of the cast for the performance of the operation. It was impossible, therefore, to position these patients to any marked degree. It is remarkable that a satisfactory result was obtained, in that children respond poorly to hypotensive agents because of considerable adaptability and resiliency of their cardiovascular tree. This was true in the majority of these patients. They had but a transient fall in blood pressure. Nevertheless, the operative field was considerably drier than usual as is indicated by the fact that it is the custom to do these extensive fusions in two stages, five vertebrae at each stage, with transfusion of 1,000 cc. to 1,500 cc. of whole blood each time. Of the 21 patients undergoing procedures involving the shoulder joint or upper humerus, only 6 were given transfusion with 500 cc. of whole blood.

From the point of view of the surgeon, it was possible to produce the best results in operations about the shoulder joint. We considered this to be partly due to the more favorable position for postural hypotension that can be adopted for these patients. When muscular relaxation was maintained, the results in patients undergoing spinal fusion were equally as good. It is the considered opinion of the surgeons with whom we have worked that blood loss was diminished to the extent of between 1,000 cc. and 1,500 cc. in patients undergoing spinal fusion and to a lesser extent in the other operations. It is considered that the operative time was reduced, although, when a Wilson plate was being inserted for the purpose of fixing the lumbosacral spine, the operative time was not materially diminished. It was easy to maintain anesthesia in these patients by using nonexplosive anesthetic agents. Surgeons were able to use the cautery whenever they desired.

It has been stated that patients receiving hexamethonium salts took longer than usual to awaken from anesthesia. This was not our experience. Frequently patients were awake and rational by the time they reached the recovery room. In the immediate postoperative period, they were usually quiet and complained less of postoperative pain than the average. There was some increase in nausea and vomiting during the first 24 hours after surgery, but this did not persist. Urinary output, which we watched closely, was uniformly adequate. We had no instances of oliguria or anuria after the use of these agents, and the output in the first 24 hours usually exceeded 1,000 cc. An output of 5,000 cc. on the third postoperative day was recorded for two patients in this series. No postoperative hematomas developed, and one surgeon remarked on the dryness of wounds for spinal fusion postoperatively. This absence of hematomas may have been due in part to our [illegible] to use vasopressors to elevate the [illegible] the end of the operative period. It is our opinion that the use of vasopressors leads to formation of hematomas and can, on occasion, give one a false sense of security in cases in which blood loss has not been adequately replaced. One patient, who underwent a Judet arthroplasty and appeared to be doing well, had a moderate fall in blood pressure five hours postoperatively. This was treated by a transfusion of 500 cc. of whole blood after which the blood pressure slowly returned to the normal level. These patients tolerate blood loss poorly, and any blood lost must be replaced. It may be pointed out that the position in which these patients in this series were placed on the operating table contributed to satisfactory production of postural hypotension at that time. In the postoperative period when they were lying prone or supine, the return of blood to the heart was facilitated and led to a rise in blood pressure. This circumstance served to make the use of this procedure proportionately safer. It is unwise to elevate the head of the bed until stabilization of blood pressure is complete. It is difficult to make any estimate of the effect that this method had on the convalescent period. These patients were all in the hospital for prolonged periods after operation, and the method of anesthesia had little influence on the length of hospitalization.

Data on Patient Before, During, and After Surgery

Time	Blood Pressure, Mm. Hg	Cardiac Output, L/Min.	Total Peripheral Resistance	Remarks
Preop, 10:45 a.m.	106/78	2.2	3120	Patient apprehensive
11:05	.....	...	....	Anesthesia induced
				Hexamethonium, 5 mg., I.V.
11:07	100/66	2.9	2210	
11:15	80/60	4.3	1280	
11:20	84/60	3.5	1560	
11:30	74/54	3.4	1420	
11:40	74/50	5.0	960	
11:45	.....	...	....	Blood transfusion started
11:50	66/54	3.8	1180	
12:00	58/42	3.7	1010	
12:10 p.m.	74/50	2.7	1680	
12:20	72/48	3.5	1300	
12:35	82/50	2.9	1760	
12:45	86/50	2.6	1970	
12:50	86/50	2.9	1760	
1:00	92/52	2.7	1300	
1:05	.....	...	....	Operation completed
Postop, 2nd day	128/80	2.4	3180	Complaining of pain
8th day	120/72	4.0	1820	

Special investigations on a few of these patients included the use of the heart sound meter for determination of cardiac output before, during, and after operation. We found that there was little change in the cardiac output after the injection of these drugs, although there was usually a profound fall in the total peripheral resistance. These findings are in agreement with those of Gilmore, Kopelman, McMichael, and Milne [1] but at variance with those of Shackman, Graber, Melrose, and Smith.[2] The data on a 19-year-old patient who underwent a Kuntschner nailing of the right femur are given in the table. Anesthesia included thiopental (Pentothal) sodium, curare, nitrous oxide through an endotracheal tube, and oxygen. The patient received 500 cc. of blood, 500 cc. of sodium chloride solution, and 200 cc. of 5% dextrose solution during the procedure.

We have been impressed with the usefulness of hexamethonium compounds in major orthopedic procedures. We have been equally impressed with their usefulness in other fields of surgery and with their property to block noxious reflexes arising in the parasympathetic system as well as in the sympathetic system. We remain convinced that one cannot be too cautious in the use of these agents and that every precaution should be taken to ensure that patients to whom they are administered are fit to receive them. To quote Sir James Learmonth, "The production of an ischemic field in the trunk by the employment of a hypotensive technique should not be routine even when both anaesthetist and surgeon are familiar with it, although it provides conditions so favourable that I for one must regularly remind myself of this." [3]

SUMMARY AND CONCLUSIONS

The place of the hexamethonium compounds in anesthesiology should now be more clearly defined. They possess a wide range of usefulness in spite of objections to their use. Current discussion of the use of antibiotics and the more serious complications of their use is cited to support this belief. The circumstances under which the hexamethonium compounds may be used and criteria for the selection of patients are indicated.

Ninety-one patients undergoing major orthopedic procedures are included in the series. The length of operation, dosage of hexamethonium ion required, and amount of blood replacement deemed necessary are discussed. The point of view of the surgeon is presented, together with a discussion of the effects on the immediate postoperative period. A special investigation of the use of these compounds is mentioned to show the absence of deleterious effects on the heart.

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1. Gilmore, H. R.; Kopelman, H.; McMichael, J., and Milne, I. G.: The Effect of Hexamethonium Bromide on the Cardiac Output and Pulmonary Circulation, Lancet **263**: 898 (Nov. 8) 1952.

2. Shackman, R.; Graber, I. G.; Melrose, D. G., and Smith, J.: Haemodynamics of Methonium Hypotension During Anaesthesia, Anaesthesia **7**: 217 (Oct.) 1952.

3. Learmonth, J.: The Surgeon and Ischaemia, Brit. M. J. **1**: 743 (April 4) 1953.

Trichinosis.—The great frequency of trichinosis in our country has long been a source of "astonishment and horror [to] many other people in many other countries." . . . Microscopic inspection of pork was deemed not suited to our high-speed processing methods, even though it has been practiced in many other countries for many years, apparently with a large measure of success. . . . A second possible method of control which could be instituted is that of low-temperature treatment of all pork. . . . The costs . . . make this method too expensive to be applied to all pork produced. A third method, that of boiling all garbage that is fed to hogs, has during 1953 been instituted in most states in the United States. . . . The method of irradiation provides direct protection to the consumer and has many advantages over other methods. It is sanitary. . . . It is simple and rapid. . . . The wholesomeness of the meat is preserved. . . . The method is relatively inexpensive. . . . The method should largely obviate the need for special processing (heating, freezing, or curing) of certain ready-to-eat pork products such as sausages and smoked ham, in order to destroy trichinae larvae. . . . The irradiation method could well become exceedingly valuable in educating the public to eat pork as an article of diet that is safe, besides being nutritious and rich in thiamine (Vitamin B_1). . . . The method would tend to eliminate trichinosis at its source, inasmuch as ingestion of scraps of irradiated trichinous pork by hogs would not transmit the infection to them, and consequently their flesh would not carry the danger of trichinosis when it was eaten by man.—S. E. Gould, M.D.; H. J. Gomberg, Ph.D., and F. H. Bethell, M.D., Prevention of Trichinosis by Gamma Irradiation of Pork as a Public Health Measure, *American Journal of Public Health*, December, 1953.

CONVULSIONS IN YOUNG INFANTS AS A RESULT OF PYRIDOXINE (VITAMIN B_6) DEFICIENCY

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During 1952 and the early part of 1953 a peculiar phenomenon occurred among infants characterized by epileptiform convulsions unassociated with any other signs of illness and devoid of either physical findings or laboratory data indicative of or suggesting an etiological factor. Unpublished reports of this condition began to come from scattered areas throughout the nation in 1952, first from Odessa, Texas, then from Arkansas and California, and finally from all parts of the country.

These infants presented a strikingly uniform picture: a normal birth history, normal growth and development, a continuous good state of general health until 8 to 16 weeks of age, when suddenly generalized convulsions occurred, usually several times a day. No apparent reason could be found. In those who were hospitalized for study, nothing significant was uncovered. In some there was a mild elevation of spinal fluid protein, and in a few, the serum phosphorus level was moderately elevated. Subdural taps never revealed any abnormalities. The electroencephalograms that were made in some cases were said to show mild unlocalized abnormalities.

All of these infants had been artificially fed, and the food they had been given was liquid SMA (consists principally of defatted cow's milk, vegetable and animal fats, and vitamins, plus iron). All of the infants when fed another milk formula or given supplementary foods such as cereals, fruits, meats and vegetables were free from convulsions.

We cared for six infants with this condition within a short time. Because some of our patients and the patients of others were given anticonvulsant drugs for fear their convulsions were early manifestations of epilepsy, our case reports are presented together with a discussion of the now-known cause. We felt that other physicians who have encountered infants with this condition might derive help from this discussion in clearing up their own confusion and that of the involved parents.

REPORT OF CASES

CASE 1.—On Dec. 30, 1952, at the age of 3 months a baby girl had the first of four convulsions. She had been fed with liquid SMA since birth. Studies at the Los Angeles Childrens Hospital showed no abnormalities except that the spinal fluid protein level was 60 mg. per 100 cc. and the electroencephalogram was diffusely abnormal. The formula was changed to evaporated milk, and no more convulsions occurred. An electroencephalogram at 11 months of age showed no abnormalities, and the baby's development had been excellent.

CASE 2.—On Feb. 9, 1953, at the age of 2½ months a baby boy had a generalized convulsion followed by two others in the next two days. He had been fed with liquid SMA since birth, and even though use of SMA was continued, there were no more convulsions. Results of laboratory studies were normal, and no electroencephalogram was made. This infant is normal in every respect, and daily administration of phenobarbital was discontinued after the diagnosis was made.

CASE 3.—On Nov. 20, 1952, at the age of 2⅓ months a baby girl began having a series of generalized convulsions that lasted a month. She had been fed liquid SMA since birth, and it was given for two months after the convulsions ceased. An electroencephalogram done at time of the convulsions was interpreted as showing mild abnormalities. Results of a repeat study at 11 months were completely normal, and administration of phenobarbital was discontinued. She was an entirely healthy child at the time of writing.

CASE 4.—Born March 15, 1952, a baby girl was well for 2½ months when she had a series of generalized convulsions. Results of an examination were negative, and results of laboratory tests were all normal except for a high serum phosphorus level and a diffusely abnormal electroencephalogram. She had been fed with liquid SMA since birth. After a change in formula while being studied in the hospital, she had no further seizures and has been developing normally.

CASE 5.—Born April 9, 1952, a baby girl had her first of a series of generalized convulsions at the age of 2¼ months. She had been fed liquid SMA since birth. When an evaporated milk formula was substituted, the seizures were no longer observed and she has been entirely normal since.

CASE 6.—Born June 27, 1952, a baby boy was fed liquid SMA from birth. At the age of two months he had a generalized convulsive seizure followed by many more during the next week. A thorough hospital workup revealed nothing except a high serum phosphorus level and a diffusely abnormal electroencephalogram. Since the formula was changed from SMA to evaporated milk, there have been no seizures and the baby's progress has been quite normal.

COMMENT

Although not yet certain, there seems little doubt that a deficiency of pyridoxine (vitamin B_6) in the liquid SMA produced in parts of 1951 and 1952 by the Wyeth Company was the cause of these convulsions in 2 to 4-month-old infants who were otherwise healthy. No cases were reported among infants receiving powdered SMA, which contains an adequate amount of pyridoxine. The Wyeth Company [1] was most cooperative in our experience and did everything in its power to take the offending material off the market as soon as it was even suggested that SMA was the source of the difficulty. Two factors that may have been responsible for the deficiency of pyridoxine were a change of fats from coconut to palm oil by the company late in 1951, based on a study by Barbero and associates [2] and a different mode of sterilization in the can, which may have destroyed pyridoxine.

Pyridoxine is a vitamin about which little was known until recently. Its essential functions had been studied, of course, but deficiency states in man were not reported. Chick [3] in 1940 first reported the occurrence of convulsions in rats and pigs fed a diet lacking in pyridoxine.

From the Los Angeles Childrens Hospital.

[1] Personal communication from Wyeth Laboratories.

[2] Barbero, G. J., and others: Investigations on the Bacterial Flora, pH and Sugar Content in the Intestinal Tract of Infants, J. Pediat. **40**: 152, 1952.

[3] Chick, H.; El Sadr, M. M., and Worden, A. N.: Occurrence of Fits of Epileptiform Nature in Rats Maintained for Long Periods on Diet Deprived of Vitamin B_6, Biochem. J. **34**: 595, 1940.

The first report of pyridoxine-deficiency convulsions in humans was by Synderman[4] in 1950. He showed that apathy, failure to gain weight, anemia, and convulsions occurred on a pyridoxine-deficient diet and that administration of pyridoxine corrected the condition.

The 1951 edition of New and Nonofficial Remedies mentioned for the first time that infant convulsions might be caused by pyridoxine deficiency.[5] Finally, the A. M. A. Council on Pharmacy and Chemistry reported in The Journal for Sept. 22, 1951,[6] the whole subject in detail and warned that convulsions in infancy could be produced by pyridoxine deficiency.

Thus the mystery of this peculiar convulsive disorder of young infants occurring during 1952 has been solved. It is our purpose in presenting these clinical case reports to acquaint physicians of the solution of this problem so that they may reopen cases in which a diagnosis of seizures of unknown etiology was made and determine if they were due to accidental pyridoxine deficiency. The pleasure and relief afforded the parents of our six cases through a simple explanation for what appeared to be an ominous condition was very gratifying.

The situation we have described is just another instance of the dangers involved in attempting to copy human milk by blind reliance on laboratory analysis. There probably are several properties of human milk we have not yet learned to discern by laboratory methods. Human milk, it may be noted, has a high level of pyridoxine.

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4. Synderman, S. E.; Carretero, R., and Holt, L. E.: Pyridoxine Deficiency in the Human Being, Fed. Proc. 9: 371, 1950; Pyridoxine Deficiency in the Human Infant, J. Clin. Nutrition 1: 200, 1953.

5. New and Nonofficial Remedies, Philadelphia, J. B. Lippincott Company, 1951, p. 493.

6. Pyridoxine Hydrochloride (Vitamin B_6): A Status Report, report of the Council on Pharmacy and Chemistry, J. A. M. A. 147: 322 (Sept. 22) 1951

CONVULSIVE SEIZURES IN INFANTS WITH PYRIDOXINE-DEFICIENT DIET

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In the fall of 1951, four young infants with hyperirritability and recurrent seizures were admitted to the pediatric department of the Saint Joseph's Hospital. Extensive clinical and laboratory evaluations were made, including complete blood cell counts, urinalysis, blood urea nitrogen, electrolyte determinations, glucose tolerance test, x-ray survey, phenylpyruvic acid test, spinal tap, and electroencephalogram. All laboratory procedures on each patient were within normal limits. During their hospital stay, all of the infants clinically improved, with rapid decrease of their hyperirritability and cessation of their seizures. Without benefit of medication, all have remained free from seizure throughout the succeeding two years. The appearance of this small group of unexplained seizures prompted a review of the cases, with the revelation of one pertinent observation. From birth each infant had been fed on liquid SMA formula, which consists principally of defatted cow's milk, vegetable and animal fats, and vitamins, plus iron. Furthermore, the only definitive therapeutic measure undertaken was that of changing diet of each from the liquid SMA to the hospital routine evaporated milk formula, the use of which was continued after discharge from the hospital. Since these original observations in 1951, an additional 50 cases have come to my attention and have provided the basis for this report. No cases were encountered in infants receiving SMA powder formulas.

METHODS AND MATERIAL

The infants reviewed in this study were uniform in the pattern of their problem, varying only in the degree of severity of their symptoms. Clinical observation therefore became the main tool of this investigation. The extensive laboratory work-up originally undertaken was abandoned after a number of patients had shown no appreciable changes from normal. It was felt that of the procedures available, the electroencephalogram was the most likely to provide the desired data on the status of the central nervous system. Wherever possible, electroencephalographic studies were made, with the paralydehyde method of sleep induction previously described.[1] Tracings were done under the usual conditions of normal room temperature, noise level, and reduced illumination with the patient recumbent on a sponge mattress. A standard six channel electroencephalograph was used with the sensitivity set at 7 μv per mm. Twelve electrode placements were used of the bentonite type (all reading 3,000-5,000 ohms); tracings of all areas of the brain were obtained by both scalp-to-ear and scalp-to-scalp techniques.

RESULTS

The clinical observations in these cases provided much important information. All of the infants had been fed liquid SMA from birth and had received no supplemental feedings of solid foods. Some of them had been given additional vitamins in the form of multiple vitamin preparations, none of which contained pyridoxine (vitamin B_6). Their ages ranged from 5 weeks to 4 months, with the average about 2½ months. The onset of the syndrome was usually subtle, with an apparent gastrointestinal phase of colic with abdominal distress, spitting up, and hyperirritability. Parents described the infants' activities as becoming increasingly alarming with episodes of crying out, stiffening of the body and extension of the head, staring, and periods of rolling the eyes upward. In most of the cases, these changes became progressively more severe with resultant generalized convulsive seizures of short duration. These seizures occasionally became as frequent as six to eight per day with variations of duration from a few minutes to 10 or 15 minutes. At no time was it possible to demonstrate any evidence of injury, infection, or abnormality that might have contributed to their appearance.

From the Department of Pediatrics, Saint Joseph's Hospital.

[1] Coursin, D. B.: Intramuscular Paraldehyde for Artificial Sleep, Electroencephalog. & Clin. Neurophysiol. 5: 305-308 (May) 1953.

Between seizures electroencephalographic studies were done, on repeated occasions with no clear-cut abnormality evident in any tracing. The well-known lack of established patterns of activity of the very young perhaps obscured some changes so that they were not recognizable; however, comparison of the observations in this group with known normals of the same age did not reveal any significant difference in patterns. Therapeutically, it was possible to control the syndrome either by sedation or by change in diet. Phenobarbital in doses of ⅛ grain three times a day controlled all symptoms of patients maintained on liquid SMA, but episodes would recur soon after medication was stopped, suggesting that the sedation masked a more deeply based problem.

A change of diet to evaporated milk formulas provided a ready cure for the phenomena with disappearance of symptoms. A return to liquid SMA caused exacerbations within 48 hours. It could be further demonstrated that with patients continued on liquid SMA, the addition of cereal would produce definite improvement.

It was apparent, therefore, that the liquid SMA of 1951 either contained some substance or lacked some element of nutrition to a degree that hyperirritability and convulsive seizures could be produced in some very young infants. Extensive studies failed to reveal any toxic material in the formula. Apparent correlations of the seizures with changes in water supplies induced by drought and with the fatty acid components of the formula were found to be invalid. Vitamin assays, however, showed the formula to contain less than 60 mcg. of pyridoxine per liter following the rigorous autoclaving of the formula. This manufacturing precaution against any possible contamination had, therefore, apparently destroyed much of the pyridoxamine and pyridoxal, the naturally occurring forms of pyridoxine. While no minimum daily requirements have been established for pyridoxine, this level of the vitamin, associated with its previously described effects on the nervous system, suggested that pyridoxine was probably the etiologic agent.[2] Since cases were reported from Texas, Arkansas, and Illinois, a general notice to all physicians was issued by Wyeth, Inc., describing the possible hazard of a pyridoxine deficiency in some infants. This led to the use of the vitamin intramuscularly or orally in at least nine cases of seizures, with definite clinical improvement.[3] The follow-up has of necessity been short, but these patients probably will not have exacerbations if their pyridoxine ingestion is kept above minimal requirements.

ROLE OF PYRIDOXINE

The relationship of convulsive seizures to pyridoxine deficiency has been well established in rats,[4] chicks,[5] and pigs [6]; on the other hand, studies in humans have been limited to isolated instances, such as that of Snyderman and associates.[7] They reported a case of a mentally defective child of 4 months who had been maintained on a pyridoxine deficient diet for 76 days with a resultant severe seizure episode. Addition of pyridoxine to the diet prevented recurrences. Stokes and associates [8] have also made some interesting observations on a patient with an apparent congenital metabolic defect of pyridoxine metabolism with resultant need for continued maintenance dosage of pyridoxine to prevent seizures. Therapeutically, Ernsting and Ferwerda [9] have reported some favorable results in the use of pyridoxine in the treatment of epilepsy. One of the patients in the group treated with pyridoxine has provided perhaps the most clear-cut clinical and laboratory evidence of the relationship of pyridoxine to this whole problem.

REPORT OF A CASE

The baby had been a full-term newborn infant delivered without difficulty and with no neonatal distress. Feedings had consisted of liquid SMA entirely. At 4 weeks of age, the baby was noted to be irritable and to have supposed colic pains, with tossing of his head and stiffening of his whole body. Progressive changes with staring episodes and generalized seizures were noted. The infant was admitted to the pediatric department of St. Joseph's Hospital at the age of 2½ months. The physical examination was not remarkable. Laboratory studies, including an electroencephalogram, were within normal limits. Feeding of liquid SMA was continued in the hospital with no evidence of seizures; however, it was discovered that a relief nurse had been giving him cereal. Feedings were then limited strictly to liquid SMA with reappearance of symptoms in five days. On the fifth day, the infant became more evidently affected and went into status epilepticus. The eyes remained fixed and staring, pupils contracted with no reaction to light. The body was held rigid with the head thrown back. Generalized convulsive seizures recurred repeatedly with occasional outbursts of an abnormally high-pitched monotone cry. There was some evi-

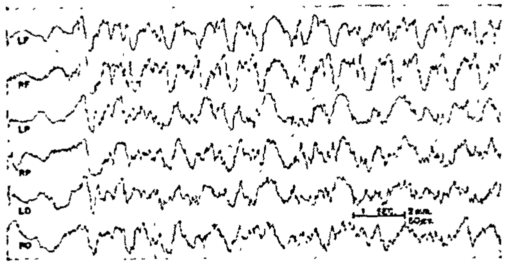

Fig. 1.—Electroencephalogram of convulsive seizure during status epilepticus, while the infant was on a liquid SMA diet. In this scale, five vertical lines equal one second and 2 mm. in amplitude equal 50 µv.

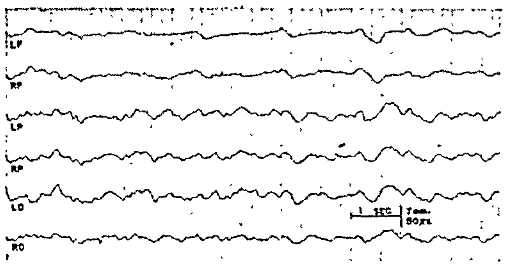

Fig. 2.—Electroencephalogram taken five minutes after injection of 100 mg. of pyridoxine intramuscularly during status epilepticus, while the infant was on a liquid SMA diet. In this scale, five vertical lines equal one second and 7 mm. in amplitude equal 50 µv.

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[2] Gyorgy, P.: Personal communication to the author.

[3] Farrar, G. E., Jr.: Personal communication to the author. May, C. D.: Personal communication to the author.

[4] Daniel, E. P.; Kline, O. L., and Tolle, C. D.: A Convulsive Syndrome in Young Rats Associated with Pyridoxine Deficiency, J. Nutrition 23: 205-216 (March) 1942.

[5] Lerkovsky, S., and Kratzer, F. H.: Pyridoxine Deficiency in Chicks, J. Nutrition 24: 515-521 (Dec.) 1942.

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dence of cyanosis about the lips, and there was no response to painful stimuli. Pulse was rapid and regular at 180 per minute. Respirations were gasping at 40 per minute. The patient was placed in oxygen with some improvement of color but no effect on the seizures. He was removed to the electroencephalograph laboratory and connected by means of needle electrodes to the electroencephalograph apparatus. Continuous recording was undertaken with great technical difficulty due to the child's muscular activity. Successful tracing, however, was obtained with evidence of markedly increased voltage of 200 μv and slowing to 2-3 waves per second, which appeared in bursts with recurrently accompanying spikes and lasted 4 to 6 seconds. The bursts were interspersed with 40 μv, 20-per-second fast activity of 3 to 4 seconds' duration (fig. 1). On occasion, during prolonged rigidity, runs of high voltage 3-per-second waves lasting 20 to 30 seconds were obtained. This pattern of activity with accompanying clinical seizures was well established when 100 mg. of pyridoxine was given intramuscularly. For about one minute following injection, there was little change in the electroencephalogram; however, by three minutes, activity had definitely diminished, and by four or five minutes after injection, the electroencephalogram became a normal sleep record (fig. 2). Clinically, without added oxygen, the infant had good color, slept peacefully, and showed no evidence of tremor or rigidity. He was removed to the children's ward and within 24 hours was much improved. In 48 hours, there was little evidence of previous difficulties. A third electroencephalogram, which compared favorably with the preseizure record and did not show any evidence of abnormal pattern, was taken 36 hours after the seizure episode.

The dramatic improvement in this baby in the presence of status epilepticus was most impressive. The rapid absorption and utilization of pyridoxine has been evident from other studies; however, it is felt that this is probably one of the first actual recordings of neurological response to pyridoxine under these circumstances. The infant has been free from seizure on a continued formula of the liquid SMA with supplemental pyridoxine.

SUMMARY AND CONCLUSIONS

A review of the sequence of events in the 1951-1953 study of a syndrome of hyperirritability and convulsive seizures in young infants is presented. The evidence at hand appears to prove conclusively that these observations occurred in infants fed a liquid SMA preparation, which consists principally of defatted cow's milk, vegetable and animal fats, and vitamins, plus iron and contains insufficient pyridoxine (vitamin B_6). The manufacturer has added thermostable pure pyridoxine to the new (June, 1953) liquid SMA in an attempt to solve this problem; so far no cases of the syndrome have been reported in infants fed this formula. An interesting group of 54 patients clearly demonstrated the need for pyridoxine in infant nutrition. Those who received pyridoxine with observed clinical improvement supplied valuable empirical evidence of their need for the vitamin. However, the one patient who experienced status epilepticus that was clinically and electroencephalographically demonstrable and improved after pyridoxine intramuscular injection provided the final link in the chain of evidence supporting the syndrome as being the result of a specific deficiency. The ramifications of this problem are numerous and are beyond the scope of this paper. Additional work seems indicated in order to provide a more specific determination of minimal daily requirements for pyridoxine in infancy. Furthermore, a better understanding of the role of pyridoxine in nerve cell metabolism would no doubt be of value in answering some of the questions of its significance in transamination, in the metabolism of glutamic acid, and in the process of myelinization.

37 W. Orange St.

TEACHING INTERNAL MEDICINE AT UNIVERSITY OF OKLAHOMA SCHOOL OF MEDICINE

A PROGRAM FOR UNDERGRADUATES

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and
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Recently, those concerned with medical education have been reexamining their aims and methods. The deficiency oftenest emphasized is a lack of effective coordination and integration in teaching. Suggested remedies have included relaxing departmental barriers, eliminating some departments, or combining them. Perhaps the need for change may best be brought into focus by a brief review of earlier steps that have led to present forms of medical teaching. With the rapid and imposing accumulation of data pertaining to the functions of organs and organ systems in experimental animals and in man, clinical teachers were left deficient in many of the sciences basic to medicine. This led to the establishment of the "preclinical" departments that now have jurisdiction over a certain number of hours of the student's life. During this same era, the most pressing medical problems were infectious diseases for which effective therapy was unavailable. The all-important bedside care molded the clinical teacher's attitude, and it also limited his horizon. More recently, with the striking reduction in the number of fatal or even serious infections, and with increasing interest in the problems of ageing and of social and emotional adaptation, exclusive emphasis on bedside teaching has given way to a growing interest in the ambulatory patient. The research interests of medical faculties have also changed. The "preclinical" teacher is now more inclined to observe experiments in man, and the clinician is becoming more physiologically minded. These developments call for a closer integration of the subject matter of the various departments and raise the question as to whether the departmental approach to medical education has become outmoded, arbitrary, and uneconomical.

From the Department of Medicine, University of Oklahoma School of Medicine.

Our feeling at the University of Oklahoma has been that one cannot infuse a new spirit of integration into teaching by merely manipulating the curriculum. Moreover, we felt that the departmental approach should be tampered with judiciously lest an orderly presentation be replaced by a scramble of notions, and we held that much teaching was not necessarily equivalent to much learning. Accordingly, the faculty attempted to effect a major change in orientation and emphasis with a minimum change in organization, working within the time allotted by the then current curriculum and with existing funds. The new plan has been in operation for a full academic year.

It was generally appreciated that a natural function of a department of medicine was to foster integration. Special clinics in medicine were largely eliminated, and specialty teaching was aimed at stimulating the student's curiosity. Although the members of the department of medicine served as consultants in their specialties, they did not restrict their teaching to fields of special interest but, by example, emphasized that any physician must be prepared to assume the care of the patient. Lengthy and cumbersome committee meetings were avoided in putting the program into operation. Plans were formulated in brief informal meetings of interested personnel. We make no claim for originality or, at this early date, for the merits of this program.

FIRST YEAR

In the freshman year the department of medicine at the University of Oklahoma is allotted one hour per week for a total of 36 hours. During most of the first semester the course is devoted to the history of medicine. Chronology is not emphasized, and there is no attempt made to include all the major figures or developments in medicine. Rather, an effort is made to stimulate the student's interest in historical reading by emphasizing how a contribution becomes significant and by dwelling on some of the ingredients of greatness. The life and work of one great man in medicine is considered in each of 10 lectures. The lecturer is chosen without concern for his faculty affiliation, but for his inspirational qualities and his special interest in the man under discussion. The student is encouraged to see the basic values common to all lasting contributions. The remaining lectures of the first semester deal with the evaluation of evidence. This is considered basic to the effective functioning of a good practitioner, as well as an investigator, or a teacher.

The second semester of the first year is devoted to demonstrations of clinical cases. The case presented corresponds to material under study in either physiology or biological chemistry. The pathological physiology of disease and the value of astute observation and logic are stressed, rather than therapeutics. These sessions attempt to implement the emphasis on the evaluation of evidence and enable the student early in his medical career to see the application of the basic disciplines in the solution of a patient's clinical problem.

SECOND YEAR

The second year course in medicine is traditionally called physical diagnosis. We have retained the name but altered the aims. It is held that physical diagnosis should not involve only the elicitation of sights, sounds, and sensations from various parts of the body but an opportunity to appraise evidence obtained by talking with patients as well as by examining them. Ninety hours have been allotted to this course. The time is evenly divided between two semesters. The early sessions of the first semester are devoted to history taking. The purposes underlying each section of the history are discussed, and the significance of symptoms in terms of altered function is dwelt on. Later, the techniques of talking with patients are illustrated and the data obtained are evaluated before the entire class. Then the entire physical examination is demonstrated several times before focus is directed toward any single organ system. Special interest in part of the examination is suggested in each case by data in the patient's history. Finally, the techniques of examination are presented in a setting of bodily systems rather than areas of anatomy. The pathological basis for abnormal signs is discussed with the entire class, and later small groups of students practice, under supervision, the techniques of examination. Thus, the correlation of data is emphasized rather than the acquisition of a set of new facts. At all times the sequence of communication, examination, and formulation is stressed.

In the second semester of the second year all exercises are held on the wards and the emphasis is nearly equally divided between history taking and physical examination. During 5 of 15 three hour sessions the students individually review, with an instructor, a history taken at an earlier session. After an hour of discussion, each student goes to a new patient to take a new history. The remaining 10 sessions are devoted to examination of patients and correlation of historical and physical findings. Three students are assigned to examine one patient, and two groups of three meet with a single instructor for an hour's discussion of their findings. After discussion, the students and the instructor return to the patient to review the findings. A most important feature of these sessions is the attitude of the carefully selected instructors who view their assignment as an introductory course to medicine in its broadest sense, not just an exercise in physical diagnosis. To this end, approximately one-half of the patients selected for study come from services other than medicine, notably pediatrics, as well as surgery, the surgical specialties, and gynecology. Instructors from pediatrics and the other specialties make up approximately one-third of the teaching staff.

In order to further serve the broad aim of the second year, namely, teaching students to use what they have learned in earlier studies, the class is encouraged to attend weekly medical grand rounds as an elective exercise. These rounds are conducted primarily at the postgraduate level. At their conclusion the second year students are held for an additional half hour, in order to clarify points that might have been obscure or confusing. This part of the grand rounds exercise is conducted in an informal question and answer fashion by one of the senior full-time members of the medical staff.

THIRD YEAR

Ten weeks, or one-third of the total inpatient clerkship time in the third year is devoted to medicine. One group of attending physicians serve as tutors for the clinical clerks and are not held responsible for the ward care of patients or the instruction of house officers. Groups of six students meet four times a week in two hour tutorial sessions. Three instructors alternate in conducting these tutor sessions so that students are exposed to a variety of special interest and teaching methods. To insure continuity, one of these instructors who is director of the third year course in medicine meets weekly with each group of students. The whole group of clerks assigned to medicine participate in a weekly conference devoted to the comprehensive evaluation of a patient. In this conference emotional and social factors are emphasized. The third year clinical clerks also attend the weekly medical grand rounds. Because we are emphasizing the goal of integration, it is significant that these sessions are attended by two radiologists, at least two pathologists, the professors of physiology and pharmacology, and one or two members of the faculty of biochemistry, pediatrics, or surgery. All come voluntarily.

During the present academic year, we are sharing a 12-week clerkship period on medicine with inpatient psychiatry. Medical and psychiatric patients are assigned in rotation to the same group of clerks, and special efforts are made to integrate the study of the patients in each department. The child psychiatry clerkship runs concurrently with the six week pediatric clerkship.

FOURTH YEAR

The greatest departure from traditional teaching methods was instituted June 15, 1952, when the fourth year students at the University of Oklahoma began their outpatient clerkships in all clinical departments on a "longitudinal" rather than a "block" system. Each student is assigned to the various clinics on different days of the week throughout the entire year. The student serves one, two, or more sessions each week in each clinic, depending on the curricular hours allotted to each department. He no longer spends a solid block of time serving in one department after another. Apart from the advantages of long-term observation in the care of patients and the opportunity to correlate experiences gained in the various specialties, this longitudinal system enables the faculty in each department to observe and appraise the growth of the students throughout the year, so that grading is more equitable and recommendations for internships can be more concrete, reliable, and up-to-date.

The assignment of patients to the clinics is made on an appointment basis and all new patients are first seen in the medical clinic. In medicine, each student is assigned one new patient per clinic session. An instructor supervises four students. When a patient requires referral to another clinic, arrangements are made, if possible, to plan the visit on a day when the original student can continue in charge of the patient. At the end of one year it was found that in approximately 75% of instances a single student was able to follow his patient from clinic to clinic and week after week in the same clinic. This year each student is following 90% of his patients throughout their period in the clinic. There has been a sharp reduction in the number of interclinic referrals, which might otherwise prove wasteful of the patient's and physician's time and energy.

In the medical outpatient department special emphasis has been placed on an understanding of the patient's adaptation to his family and his community. This phase of the teaching has been guided by a physician in the department of medicine who also holds an appointment in psychiatry. The arrangement allows the student, under competent supervision, to handle cases similar to those he will be expected to manage in his future practice. He also gains experience in selecting those who require expert psychiatric help and in preparing them for referral to a psychiatrist. Then the appointment for psychiatry, or any other clinic, is made on a day when the student will be there so he can continue to follow his own patient. Each Saturday morning, for two and one-half hours, a "clinic grand rounds" is held by the full-time professional director of the medical outpatient department. He meets with one-fourth of the members of the fourth-year class to discuss informally and in detail problems of the week's practice in the medical clinic. During the current year an additional weekly bedside conference is being added to follow patients admitted to the hospital from the medical outpatient clinic.

The arrangement of the curriculum and the assignment of students has permitted the development of a comprehensive care program in which patients from selected counties are followed after they return home to the care of their referring physicians. This project has been described in another publication.[1] It has included emphasis on the sociologic and psychological factors in health and disease and complements the work in the university clinics. We have learned from this experience that the outpatient department provides opportunities for the richest sort of teaching. The material, however, is often difficult to present effectively. Consequently, the ablest and most experienced teachers have been assigned to outpatient department duties, rather than reserving this service for junior staff members who are attempting to qualify for inpatient attending status. It is of interest that in the new atmosphere of the outpatient department the older men have participated with enthusiasm.

During the present academic year a special effort is being made to inject into outpatient department teaching an attitude of preventive medicine. During the period of preceptorship, which has been in effect for four years, the students have an opportunity to spend three days working in a county health department. This experience is designed to enhance students' feelings of community responsibility as physicians, to acquaint them with colleagues in public health and with the public health facilities, and to encourage an understanding of the importance of the home environment. As a corollary, it is expected that the program will promote better understanding and cooperation between public health officials and the future practitioners of the state. In addition, the fourth year students will undertake supervised home visits to their patients living in the Oklahoma City area. Experience with these newer modifications of our plan will be reported after data have accumulated.

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[1] Colmore, J. P.: University of Oklahoma Program Instructs Medical Students in Care of Long-Term Patients, Chron. Ill. News Letter 4:2 (May) 1953.

SUMMARY AND CONCLUSIONS

The experience of the past year in teaching internal medicine to the undergraduates at the University of Oklahoma is reviewed. There have been certain changes in emphasis and arrangement in the first three years. The major curricular change has been in the fourth year, where a "longitudinal" curriculum for the senior student's outpatient clerkships has replaced the old "block" system. The student serves for a part of each week in all of the major clinics throughout the year. Apart from the obvious advantages that the system offers in long-term care, it has synchronized the student's growth in all of the disciplines of clinical medicine. In the department of medicine it permitted the introduction of a comprehensive care program that effected a close working association between the university clinic and the patients' referring physicians. While it has been necessary to make certain curricular changes, the most important ingredient of the program at the University of Oklahoma is considered to be the broad attitudes of the teachers and the emotional climate of friendly cooperation and interest in the growth of the student rather than the competitive superiority of any single department.

800 N. E. 13th St. (4) (Dr. Wolf).

CLINICAL NOTES

PYLORIC STENOSIS IN TWO POUND TWELVE OUNCE INFANT

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Richard Chambers, M.D.
and
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To report an isolated case of infantile pyloric stenosis, treated by pyloromyotomy, there should be a good reason. We report here because, in the available literature, we have been unable to find a report of a smaller infant so treated. Gross [1] mentions an infant weighing 3 lb. and 3 oz. (1,445.8 gm.) on whom a similar operation was performed. Our patient was 8 oz. (226.8 gm.) lighter. He survived not only that operation but also a subsequent wound dehiscence, intestinal evisceration, and secondary closure. He now weighs over 7 lb. (3,175.1 gm.) and shows every indication of normal growth.

CASE REPORT

A male infant was delivered prematurely at the Northern Pacific Hospital, Glendive, Mont., March 10, 1953, weighing 2 lb. 7 oz. (1,105.6 gm.). He was born spontaneously 29 weeks after the mother's last menstrual period and after three episodes of bleeding due to a partial placenta previa. His immediate neonatal course was poor. His color was a pasty grey and his respirations very irregular. He was transferred immediately to an incubator with oxygen, and pharyngeal secretions were aspirated repeatedly. After 31 hours 5% dextrose feedings were begun subcutaneously, and 24 hours later gavage feedings of SMA (consisting principally of defatted cow's milk, vegetable and animal fats, and vitamins, plus iron) and skim lactic acid milk were begun.

Supplemental vitamins were given and on several occasions penicillin and streptomycin. Plasma or whole blood was given intravenously each week. His weight dropped to 2 lb. 4 oz. (1,020.6 gm.) then climbed steadily to 3 lb. 2 oz. (1,417.5 gm.) on his 41st day of life, at which time he began to vomit a little. The vomiting became more frequent and more forceful, until it seemed as though he was retaining none of his feedings. On his 46th day serial roentgenograms of his stomach, following a barium feeding, showed almost complete gastric retention. A tentative diagnosis of pyloric stenosis was made. Atropine was administered orally without success.

At 47 days of age he was transported by train, in an incubator with oxygen, to St. Vincent's Hospital, Billings, Mont. His weight was 2 lb. 12 oz. (1,247.4 gm.). He was dehydrated, respirations were interrupted by periods of apnea, and he appeared weak. A pyloric tumor was felt. On feeding, visible gastric peristaltic waves reversed themselves, causing a projectile vomitus; this contained barium given 24 hours before. The hemoglobin level (photoelectric colorimeter) was 8.6 gm. per 100 cc., and a transfusion was given. Preparation for surgery included dextrose in ½ N saline solution given subcutaneously, vitamins C and K, and antibiotics; the operation was performed the same day. At surgery, with the patient under 0.1% procaine hydrochloride (Novocaine) local infiltration anesthesia, a right subcostal muscle splitting incision was made, a typical pyloric tumor discovered, and Ramstedt pyloromyotomy performed. Oxygen was given continuously before, during, and after surgery. Postoperatively, the patient was given blood, glucose administered parenterally, antibiotics, and vitamin C. Glucose water feedings were retained when first given eight hours after surgery, and later diluted half-skimmed milk formulas were given. The patient gained little weight the first week.

On the eighth day the skin sutures were removed; the wound appeared well healed. The next morning (some drainage having been noticed on the dressing during the night) the wound was inspected and a small separation of skin noticed. He was taken to surgery to close this, and, while being strapped to the table, he cried, strained, and eviscerated. He was quickly prepared, the bowel reduced, and through-and-through sutures of no. 24 cotton were placed to close the wound. After surgery he was given chlortetracycline (Aureomycin) intravenously, fluids parenterally, and oxygen. After 24 hours, feedings of glucose water were resumed; in two days he was taking a full formula and began to gain weight. The sutures were removed after 16 days. He left the hospital on June 10, weighing 5 lb. 8 oz. (2,494.8 gm.) in good condition and with a well-healed wound. No vomiting was observed at any time after the initial surgery.

SUMMARY

A case is reported of infantile pyloric stenosis in a 2 lb. 12 oz. (1,247.4 gm.) infant, successfully treated by pyloromyotomy, with survival despite wound dehiscence, intestinal evisceration, and secondary closure.

404-5 Medical Arts Bldg. (Dr. Sullivan).

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[1] Gross, R. E.: The Surgery of Infancy and Childhood, Philadelphia, W. B. Saunders Company, 1953.

Diabetes and Pregnancy.—It has been said, with but slight exaggeration, that the problem of diabetes in pregnancy was created by the introduction of insulin; for in the preinsulin era of medicine only about two per cent of the diabetic women survived the rigors of the disease or overcame the known associated infertility. Those who did become pregnant usually ran a catastrophic course. Early abortion occurred frequently. An estimated 25 per cent died during pregnancy or the puerperium, and another 25 per cent died within two years, usually in diabetic coma.—J. M. Whitely, M.D., T. W. Adams, M.D., and M. H. Parrott, M.D., Diabetes and Pregnancy, *Western Journal of Surgery, Obstetrics and Gynecology,* August, 1953.

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MIGRATION FOR RELIEF FROM ALLERGIES

According to Criep [1] it becomes necessary occasionally to advise a patient with asthma to move to a dry, warm climate at a high altitude. "This type of change," he said, "is particularly of value in chronic intractable asthmatic bronchitis associated with bronchiectasis and infection of the paranasal sinuses." Although the author's statement is true and similar statements have appeared in other books and articles, overenthusiastic and thoughtless application of this principle often does great harm. As pointed out by Metzger [2]: "The mirage of climate as a curative agent for disease has long been pursued both by physicians and by the public." The results are often disappointing. Such psychogenic factors favoring improvement of the patient's condition as faith and new hope may be offset by worry over the expense involved and uprooting from familiar surroundings. Although some migrant patients are improved they are few compared with those who are either not improved or made worse. Careful analysis of the case records of those who are apparently cured by migration reveals that the real cause of the cure in many patients was the concurrent application of some recognized measure such as removal from pets, which could have been accomplished at home.

Metzger says further: "The physician . . . who glibly advises change to a fancied climatic utopia is spared the problems his injudicious counsel frequently creates for his colleagues and the communities of the state or region for which he unwittingly makes fallacious claims. Nor is he confronted with the stark human tragedy that often follows in the wake of ill advised change. Not infrequently whole families, greatly to their disadvantage, are torn from their financial and social roots in the interest of the individual sufferer." An example of the human tragedy referred to was observed by an Arizona physician.[3] A 10-year-old boy in a city in Michigan had a severe flare-up of his asthma. A local physician, possibly at his wit's end, suggested that the boy would have a better chance for life in Arizona. Impulsively his father gave up his job, bought a secondhand school bus, and moved his family of six to Phoenix, where they arrived shortly before Christmas without money or prospects. Granting that the father acted hastily and unwisely, he was surely poorly advised, and one cannot help wondering what would have happened if the local physician had said that the only chance of saving the boy's life would be for him to move to Tahiti, which is said to be the garden spot of the world.

The fact remains that every year more migrants arrive in certain areas of Arizona, New Mexico, and various seaboard states than the local communities can support or provide work for. If a person contemplates moving for reasons of health, it is essential that it be determined first whether the new climate will indeed effect an improvement and also whether he can live in the new community without being a ward of a local charity. Finally, a greater effort should be made in every case positively to identify the causative allergen and to find a suitable treatment that could be applied without a change of residence. It is especially important for the physician to recognize which patients will not benefit from a change of climate.

NOISE

Since the advent of power-driven machinery, man has been beset with the effects of unwanted sound.[1] There appears, however, to be a popular misconception regarding the extent of the harmful effects of noise. It is necessary first of all to distinguish between acute exposure (sharp, sudden noises) and chronic exposure (continuous or regularly intermittent noises). The undesirable effects of noise may be classified as (1) effects on efficiency, (2) effects on auditory acuity, and (3) effects on communication. Many studies have been conducted to determine these effects, often with conflicting results. A simplified method of interpreting the results of field surveys, in terms that can be understood by the management in industries and by the public, is needed. Meyer [2] refers to a nomogram devised by Beranek that should aid in solving this phase of the problem, and in describing the technique of noise surveys he indicates that failure to consider such factors as temperature, relative humidity, and prevailing winds has greatly decreased the value of many reported surveys. The most commonly used unit for measuring sound is the decibel, and the range of human hearing is up to roughly 130 db.

Field studies to determine the effect of noise on human efficiency have to a large extent been inadequately controlled, in that such conditions as lighting, ventilation, and increased efficiency with training and experience have not been considered. For this reason laboratory experiments have been carried out. Kryter [1] reviewed the reports of several such studies and concluded that in general noise has an adverse initial effect of slight magnitude, which through adaptation rapidly wears off whether the task be chiefly mental or muscular. In some studies after prolonged exposure to noise, cessation of noise resulted in another brief period of slightly decreased efficiency. Discontinuous loud mechanical noise and soft music were both found to be more distracting than continuous loud noise. Some sounds rated as most annoying were not also rated as most distracting. It was further concluded that man can maintain the same level of performance in a noisy as in a quiet environment for many types of activity. The noise generated by an airplane motor, for example, had little or no effect on motor coordination, reaction time, perception, or mental functions even after seven hours of exposure, despite the subjects' preference for quiet surroundings and the development of subjective fatigue and irritability.

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[1] Criep, L. H.: Essentials of Allergy, Philadelphia, J. B. Lippincott Company, 1945, p. 195.

[2] Metzger, F. C.: The Climatic Treatment of Hay Fever and Asthma, with Special Reference to Florida, J. A. M. A. **112**: 29-32 (Jan. 7) 1939.

[3] Antos, R. J.: Personal communication.

[1] Kryter, K. D.: The Effects of Noise on Man, J. Speech & Hearing Disorders, monograph supp. 1 (Sept.) 1950.

[2] Meyer, A. F., Jr.; Peterson, R. L., and Bell, H. E.: Noise as a Factor in Health, Am. J. Pub. Health **43**: 978-988 (Aug.) 1953.

In a small group of persons, exposure to noise for several hours may cause vague uneasiness, headache, otalgia, tremors, nausea, vertigo, tenseness, or insomnia. This reaction is observed most frequently in neurotic persons, may be affected by personal motivation, and does not necessarily depend on the loudness of the noise.[3] On the other hand, exposure to noises of extreme intensity (over 120 db.) causes heating of the skin, blurring of vision due probably to vibrations of the cranial bones if the frequency is between 700 and 1,500 cps, apparent muscular weakness, and loss of hearing. All of these effects are reversible. A loud unexpected noise may cause a rise in blood pressure and a decrease in gastric peristalsis and gastric secretion. These manifestations are a part of the startle reaction.

The factors that influence the effects of noise on man include (1) the fact that noise is sound of an unwanted character, (2) extremes of pitch or frequency, (3) extreme loudness, (4) unexpectedness, (5) uncertainty of the direction from which it comes, (6) unfamiliarity or inability to identify its cause, and (7) the state of health of the person exposed.[4]

Although either temporary or permanent deafness may result from exposure to noise it is not clear just what intensity is required to damage the auditory nerve. Hearing losses reported in some industrial workers are probably exaggerated because of inadequate testing conditions and lack of accurate measurement of hearing before exposure or of proper evaluation of recovery. It is difficult in older workers to say how much of their loss of hearing is due to noise and how much to age. Recuperation following removal from exposure varies with the individual, and maximal recovery may require two or more months. There is good evidence, however, that no permanent damage results from prolonged exposures to intensities of about 85 db. Brief exposures lasting up to one hour may cause some hearing loss if the intensity is 100 db., regardless of the frequency. Pain will follow exposures to 140 db., and rupture of the eardrum occurs at levels of 160 db. or more.

When there is chronic exposure, the greater the intensity of the sound the greater the resultant hearing loss, and the loss is greatest for the dominant frequency in the damaging noise and for the frequencies above that level. In persons who become deaf after exposure to a severe blast that ruptures the eardrum, the deafness is usually due to otitis media and not directly to the blast.

Noise may have a masking effect on speech and other sounds, and this may be dangerous for the factory worker, as it is likely to make auditory warning signals inaudible. In general, noise will have little effect on the intelligibility of speech if the average intensity of the speech is 18 db. more intense than the background noise throughout the frequency range 200 to 7,000 cps. It has been shown that conversation may be carried on between two persons at a distance of 6 ft. in the presence of a background noise of 85 db. by raising the voice but without undue strain or discomfort.[3]

The problem of noise control has been approached from many angles. There are laws dealing with nuisance, and from the legal standpoint noise is a nuisance if it is excessive, unreasonable, unnecessary, or injurious to health and capable of being mitigated.[4] Most leases have clauses concerning noises especially after 11:00 p. m. Persons employed in factories where noise cannot be eliminated are advised to wear ear plugs. Dry cotton ear plugs are practically valueless, but wax-impregnated cotton is effective, not uncomfortable to wear, and can be replaced daily, thereby eliminating the objection to rigid plugs that they are hard to keep clean. Even so, few workers like to wear ear plugs. One interesting observation was that in the presence of certain intensities the wearing of ear plugs may improve the reception of speech.[1] To be fully effective, plugs must reduce intensity levels to less than 85 db. They are effective in sound fields up to 120 db. and are definitely inadequate in fields of 140 db. In industries where employees are constantly subjected to loud noises serial audiograms should be obtained at regular intervals and a system of rotation to work in quieter surroundings should be in force to permit natural recuperation.

Practical industrial noise control involves the cooperation of management, engineering, safety, and medical personnel. Much can be done to damp out the vibrations of heavy machines and thereby reduce their noise, but the best place to attack this phase of the problem is in the original designing of the machines.

It may be concluded that most normal persons have a wide adaptability to noise and that once adaptation to a given noise level is achieved, energy is not expended by those working in such an environment at a rate significantly greater than normal. There are many reports claiming that noise adversely affects public health, but the possible relationship between noise and health needs further study. In view of the problems related to modern industry such study is in order now.

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[3] Barron, C. I., and Poole, F. E.: Industrial Noise: Its Effect and Control, Am. J. Pub. Health 42:705-710 (June) 1952.

[4] Davies, F. G.: Noise and the Public Health, J. Roy. San. Inst. 73:46-53 (Jan.) 1953.

THE ANTISTREPTOLYSIN TITER

The antistreptolysin O titer is used to provide evidence of the recent occurrence of a streptococcic infection. A rise in titer of this antibody is first detectable one to two weeks after onset of the infection, and the maximum titer is attained at about four weeks. Thereafter, the titer declines gradually at a rate that is variable but much slower than the rate of the initial increase. Because of the almost universal exposure to streptococcic infections, measurable quantities of antistreptolysin are found in a high proportion of older children and adults. Consequently, in using the test for diagnostic purposes, the demonstration of an increase in titer in successive serum samples or the occurrence of a very high titer is of more significance than a slightly elevated titer (100-200 units) in a single serum specimen.

The test has its most important application in the differential diagnosis of rheumatic fever. When the symptoms and signs are atypical or inconclusive, proof of the recent occurrence of a streptococcic infection affords supporting evidence for the diagnosis. The absence of an antistreptolysin response does not eliminate the diagnosis, however, since only 85 to 90% of patients with acute rheumatic fever show significant increases in this single antibody.

VOLUNTARY RETIREMENT PLANS FOR PHYSICIANS

Elsewhere in this issue (page 417) is a series of questions and answers on the features of the Jenkins (Reed)-Keogh bills, which are intended to establish a voluntary individual retirement system. Also explained are differences between these bills and Old Age and Survivors Insurance. At the St. Louis Clinical Meeting in December, the House of Delegates reaffirmed its support of these bills (H. R. 10 and H. R. 11 of the 83rd Congress) and restated its objections to physicians being placed by compulsion under the tax and benefit provisions of the Old Age and Survivors Insurance (OASI) sections of the Social Security Act. These identical bipartisan bills would give the 11 million self-employed and the 30 million pensionless employed the counterpart of the tax deferment now enjoyed by the 20 million employed covered by tax-exempt pension plans approved under section 165 (a) of the Internal Revenue Code. H. R. 10 and H. R. 11 would make no change in the Social Security Act but would provide a way for those who desire to prepay their own pensions.

RAPID DIAGNOSIS OF ADDICTION TO MORPHINE

Nalorphine (Nalline) precipitates symptoms of abstinence in persons addicted to morphine, methadone, and all related compounds and thus can be used as a means for rapidly diagnosing addiction to these drugs. Nalorphine will not precipitate symptoms of abstinence from meperidine (Demerol) unless the addict is taking 2,000 mg. or more daily. The use of nalorphine in diagnosing addiction to morphine and methadone is not an innocuous procedure, since too large a dose of nalorphine will produce symptoms severe enough to endanger the lives of persons strongly addicted to these drugs. The procedure is contraindicated in addicts suffering from any serious organic disease. It should never be carried out without full explanation to the patient, and written consent should always be obtained. Since a positive diagnosis of addiction may have serious legal implications, another physician should always be on hand to act as a witness.

The technique developed at the Addiction Research Center, U. S. Public Health Service Hospital, Lexington, Ky., is as follows. The suspected addict is examined to determine whether any serious organic disease is present. The procedure is explained to the patient, and his consent is obtained in writing. The patient is carefully examined by two physicians to determine whether symptoms of abstinence (such as yawning, lacrimation, pupillary dilatation, and "gooseflesh") are present. If they are not, 3 mg. of nalorphine is injected subcutaneously. If the patient has been taking as much as 120 mg. of either morphine or methadone daily for 15 days or more, definite abstinence symptoms, including profuse perspiration, pupillary dilatation, hyperpnea, "gooseflesh," nausea, vomiting, and defecation, will appear within 20 minutes. If these symptoms are not seen at the end of this period of time, an additional 5 mg. of nalorphine is injected, and the patient is observed for an additional 20 minutes. If abstinence symptoms have not occurred, a third dose of 8 mg. is injected. If definite abstinence symptoms are not precipitated, and if typical effects of nalorphine are evident (pupillary constriction, pseudoptosis, slurring of speech, and reduced respiratory rate), it is safe to conclude that the patient has not been taking or receiving either morphine or methadone in sufficient dose or at sufficiently frequent intervals to create a significant degree of physical dependence. If a positive test is obtained, the patient should be given 15 to 30 mg. of either morphine or methadone. Symptoms of abstinence precipitated by nalorphine will decline gradually during the course of two or three hours. If a negative test is obtained, the patient should be kept under observation until the direct effects of the nalorphine have subsided; this will require about four hours. The procedure outlined will give positive results in patients who have been taking as little as 10 mg. of either morphine or methadone four times daily for 7 days.

THE PRESIDENT'S PAGE

A MONTHLY MESSAGE

The fact has been brought to my attention repeatedly during the past few weeks that some confusion exists within the profession regarding the Joint Commission on Accreditation of Hospitals. In St. Louis, the House of Delegates adopted a resolution calling for publication of articles in The Journal and other official medical and hospital periodicals that would explain regulations, bylaws, and functions of the commission. I am privileged to help bring about such a better understanding.

The Joint Commission on Accreditation of Hospitals has assumed responsibility for the hospital standardization program previously conducted by the American College of Surgeons since 1919. Formal transfer of the responsibilities was made Dec. 6, 1952, at ACS headquarters in Chicago. From that date on, this work became a joint enterprise of the American Medical Association, Canadian Medical Association, American College of Physicians, American Hospital Association, and American College of Surgeons. Dr. Edwin L. Crosby, immediate past president of the American Hospital Association, was named director, and the commission set up its headquarters at 660 North Rush Street, Chicago 11. Additional information can be obtained from the association at that address. Dr. Crosby has assured me that he or some other representative of the Joint Commission will be happy to discuss the program of the commission with any medical group.

Twenty representatives from the five constituent organizations make up the Board of Commissioners, which is solely responsible for *all* actions on accreditation. The American Medical Association has six votes on the board. The Canadian Medical Association has one vote. The American College of Physicians and the American College of Surgeons have three votes each, and the American Hospital Association has seven votes. One of these seven votes, however, is exercised by a member representing the Canadian hospitals. Eleven members of the commission are actively engaged in the practice of medicine. Inspection of hospitals is conducted by field representatives employed by the member associations. These physicians make the survey for accreditation while carrying on their customary studies for their respective associations. For example, the A. M. A. surveyors who make the very important periodic inspections of internship and residency training programs now also make this accreditation survey. But in all instances the actual report of the survey for accreditation is sent to the Joint Commission for appraisal.

Purposes of the commission are clearly stated in the bylaws. They are:

"a. To conduct an inspection and accreditation program which will encourage physicians and hospitals of the United States and Canada voluntarily:

"(1) to apply certain basic principles of organization and administration for efficient care of the patient; (2) to promote high quality of medical and hospital care in all its aspects in order to give patients the greatest benefits that medical science has to offer; and (3) to maintain the essential diagnostic and therapeutic services in the hospital through coordinated effort of the organized medical staff and the governing board of the hospital.

"b. To establish standards for hospital operation.

"c. To recognize compliance with standards by issuance of certificates of accreditation.

"d. To assume such other responsibilities and to conduct such other activities as are compatible with the operation of a hospital accreditation program."

One of the first actions taken by the Board of Commissioners was to adopt the standards and principles in use at that time by the American College of Surgeons. Then a two-part "grandfather clause" was established. The first part permitted automatic accreditation by the Joint Commission of all hospitals that had obtained full approval of ACS for 1952. The second part provided that the standards and point rating system developed by ACS would be used initially as a basis for approval of hospitals. While the Joint Commission has the right to review these standards and make such changes as are considered necessary, it was decided to proceed slowly in adopting any major changes of policy.

Although the accreditation program is purely voluntary as far as the hospitals are concerned and no inspection is made unless requested, more than 4,000 of more than 6,000 hospitals in the U. S. and Canada are accredited or have requested accreditation. Of the 4,000, more than 80% made the grade. During 1953, a total of 1,301 hospitals were surveyed under the inspection program of the Joint Commission.

Standards for accreditation are of two types—required and contingent. Required standards are absolute prerequisites to accreditation, while the contingent standards are considered desirable but required only in accordance with the type, size, and organization of the hospital.

Most prevalent deficiencies found by the commission's field staff during the first year of operation were: (1) fire hazards; (2) need for improvement in the active supervision of clinical work done in the hospital by a well-organized medical staff that is self-governing, subject to the ultimate authority of the governing body of the hospital; (3) need for improvement in the thorough review, analysis, and evaluation of the clinical work done in the hospital on at least a monthly basis throughout the year; (4) insufficiently recorded essential clinical entries on medical records to establish diagnosis and support treatment; and (5) excessively high and unexplained rates for morbidity, cesarean sections, unjustified surgery, and infant, maternal, anesthetic, and total mortality in a hospital.

The Joint Commission on Accreditation of Hospitals is dedicated to the bringing of the best possible medical care, and improvements in such care, to hospital patients as rapidly as knowledge and experience will permit. An Associated Press reporter has aptly described the commission as "a powerful medical watchdog [that] stands guard against unnecessary operations." Of course, the work of this excellent group is more encompassing than that, but in any event its activities are directed chiefly for the benefit of the public as represented by the patients who enter hospitals for treatment. This is an unselfish purpose and one for which the medical profession can be justly proud.

Edward J. McCormick, M.D., Toledo, Ohio.

ORGANIZATION SECTION

NINTH NATIONAL CONFERENCE ON RURAL HEALTH

Baker Hotel, Dallas, Texas

THURSDAY AFTERNOON SESSION

March 4, 1954

Ballroom

ALLEN T. STEWART, M.D., *Presiding*

12:00 REGISTRATION

2:00 OPENING SERVICE

MUSICAL DIRECTOR

MELVIN MUNN, Director of Administration, Blue Cross and Blue Shield, Dallas, Texas

INVOCATION

REVEREND KERR TAYLOR, Associate Director, First Presbyterian Church of Dallas

GREETINGS

HON. ROBERT L. THORNTON, SR., Mayor, City of Dallas

GEORGE F. LULL, M.D., Secretary-General Manager, American Medical Association, Chicago

GEORGE TURNER, M.D., President, Texas Medical Association, El Paso, Texas

J. WALTER HAMMOND, President, Texas Farm Bureau Federation, Tye, Texas

JAMES M. BENDER, Master, Texas State Grange, Fredericksburg, Texas

2:30 *"Let's Put More "U" in CommUNITY*

CARLL S. MUNDY, M.D., Acting Chairman, Council on Rural Health, American Medical Association, Toledo, Ohio

2:50 *Deep in the Heart of - - - Communities*

Presentation by:

CHARLOTTE RICKMAN BENSEN, Health Education Consultant, Medical Society of North Carolina, Raleigh

Other resource persons:

M. F. RIGBY, M.D., Rexburg, Idaho

TY TIMM, Extension Economist, Texas A. & M. College, College Station, Texas

HELEN ROBINSON, Extension Health Education Specialist, University of Arkansas, Little Rock

Discussion Leader:

J. P. SCHMIDT, Professor, Rural Sociology, University of Ohio, Columbus

3:30 DISCUSSION PERIOD

5:00 ADJOURNMENT

THURSDAY EVENING SESSION

Terrace Room

CARLL S. MUNDY, M.D., *Presiding*

7:00 DUTCH TREAT DINNER

Leonardo da Vinci

CHAUNCEY LEAKE, PH.D., Vice-President, University of Texas School of Medicine, Galveston

FRIDAY MORNING SESSION

March 5, 1954

Ballroom

N. H. GARDNER, M.D., *Presiding*

9:00 COMMUNITY SINGING

9:05 *The "U" in Nutrition*

Presentation by:

JOHN B. YOUMANS, M.D., Member, Council on Foods and Nutrition, American Medical Association, Dean, Vanderbilt University School of Medicine, Nashville, Tenn.

Other resource persons:

JULIAN PRICE, M.D., Member, Board of Trustees, American Medical Association, Florence, S. C.

EVELYN L. BLANCHARD, Home Economist, Extension Service, U. S. Department of Agriculture, Washington, D. C.

RUTH PETERMANN, Nutritionist, Oklahoma A. & M. College, Stillwater

Discussion Leader:

J. P. SCHMIDT

9:35 DISCUSSION PERIOD

12:00 RECESS

FRIDAY AFTERNOON SESSION

Ballroom

GEORGE F. BOND, M.D., *Presiding*

2:00 COMMUNITY SINGING

2:05 *Health Insurance—What, How, and Why*

Presentation by:

LAMBERT SCHULTZ, Staff Executive, Group Department, Provident Life and Accident Company, Chattanooga, Tenn.

Other resource persons:

JAMES STUART, Executive Director, Hospital Care Corporation, Cincinnati

EVERETT C. FOX, M.D., Dallas, Texas

HOWARD BROWER, Asst. Secretary, Council on Medical Service, American Medical Association, Chicago

Discussion Leader:

J. P. SCHMIDT

2:45 DISCUSSION PERIOD

5:00 ADJOURNMENT

FRIDAY EVENING SESSION

Ballroom

CARLL S. MUNDY, M.D., *Presiding*

8:00 MUSICAL PROGRAM

TEXAS AND PACIFIC CHORALIERS

MAURICE PETERMAN, Director, MRS. MARY MCELREE, President. Sponsored by the Texas & Pacific Railway Company, Dallas, Texas

8:30 *Soil, Civilization, and Our Health*

GEORGE D. SCARSETH, Director of Research, American Farm Research Association, Lafayette, Ind.

SATURDAY MORNING SESSION

March 6, 1954

Ballroom

WILLARD A. WRIGHT, M.D., *Presiding*

9:00 COMMUNITY SINGING

9:05 *Cuties, Cookies, and Community Service*
JUGS—Just Us Girls
MRS. ESTHER THORNTON, Superintendent, Washington County Community Hospital, Akron, Colo.

9:40 DISCUSSION PERIOD

9:55 *Home-Aid Hospital*
GORDON MAXAM, Representative, City of Lake Preston, Lake Preston, S. D.

10:10 DISCUSSION PERIOD

10:25 *A Doctor's Answer to a Community Need*
J. PAUL JONES, M.D., Camden, Ala.

10:40 DISCUSSION PERIOD

10:55 *A Planned Approach to Doctor Distribution*
CHESTER U. CALLAN, M.D., Chairman, Rural Health Committee, Texas Medical Association, Rotan, Texas

11:10 DISCUSSION PERIOD

11:50 *"U"*
AUBREY D. GATES, Field Director, Council on Rural Health, American Medical Association, Chicago, Ill.

12:00 ADJOURNMENT

SATURDAY LUNCHEON SESSION

Terrace Room
CARLL S. MUNDY, M.D., *Presiding*

1:00 LUNCHEON

1:40 INTRODUCTION OF SPECIAL GUESTS

1:45 GENERAL PRACTITIONER OF THE YEAR
JOSEPH I. GREENWELL, M.D., New Haven, Ky.

2:00 GREETINGS—WOMAN'S AUXILIARY
MRS. LEO SCHAEFER, President, Woman's Auxiliary, American Medical Association, Salina, Kan.

2:10 *Our Investment in Rural Health*
EDWARD J. MCCORMICK, M.D., President, American Medical Association, Toledo, Ohio

3:00 ADJOURNMENT

PREPAID PENSIONS FOR ALL—INCLUDING PHYSICIANS

Before and after the Clinical Meeting in St. Louis, Dec. 1-4, 1953, many questions were raised by physicians and others regarding the differences between the Jenkins (Reed)-Keogh Bills now before Congress and proposals to force self-employed physicians and others under the Old Age and Survivors Insurance tax and benefit provisions of the Social Security Act. At the risk of oversimplifying some complicated features, the questions and answers given below provide the general reader with the essential facts.—ED.

We all hope to live to a ripe old age.

But will we all have pensions?

Pensions are vital to our modern civilization as more and more persons are living longer. The number of persons age 65 and over in the United States has quadrupled since 1900. Not all will have pensions. But all could have considerable protection for retirement years, prepaid during earning years—prepaid security, not charity. In attempting to give protection for old age, the government has permitted inequalities in tax deferment to develop with the result that persons with the same gross income are unable to prepare for retirement in the same way.

This article will point the way to equality of opportunity for *all* to *prepay* pensions voluntarily. No longer will one person be able to have a pension prepaid by tax-free income while another has to buy his annuity with income left after paying *taxes*.

A. The Law As It Stands

Which Congressional acts provide for retirement income for millions of persons?

Title II of the Social Security Act of 1935 (Old Age and Survivors Insurance) and Section 165(a) of the 1942 Federal Internal Revenue Code.

Who pays for a pension under OASI?

Employees in covered employment contribute a small percentage of their earnings up to $300 a month (at present, 2%) to the OASI Trust Fund; this amount is matched by the employer. On the same earnings, covered self-employed workers contribute an amount equal to three-fourths the combined tax of the employer and employee.

Are the OASI pensions prepaid?

No; only partially. Beneficiaries *now* on the OASI rolls have prepaid (with their employers) only one twenty-fourth of the costs of the benefits they are receiving—scarcely enough to cover the administrative costs. (The source of the 1 to 24 ratio is the report of the (Curtis) Subcommittee on Social Security of the House Committee on Ways and Means.)

Who pays for a pension in plans approved under Section 165(a)?

The employer in noncontributory plans and both the employer and the employee in contributory plans.

Are these pensions prepaid?

Yes.

Who bears the burden of employer contributions to OASI and/or Section 165(a) plans?

The contributions, as a part of employers' costs, are shifted to the consumer in the form of higher prices. The consumer paying for these benefits may be one of the 11 million self-employed who do not benefit under either category or one of the 30 million pensionless employed who do not benefit from a tax-exempt pension plan.

B. Equity Under the Present Law

Who is covered by prepaid pensions?

Under Section 165(a) there are 20,000 approved pension plans covering approximately 20 million employees.

Who is denied this privilege?

By law, the 11 million self-employed; by failure of their employers to establish pension plans, 30 million pensionless employed. Thus, two thirds of the 61 million gainfully employed are pensionless. All these self-employed and many of these pensionless employed lack the employee *fringe benefits* that characterize our era.

C. Voluntary Pensions for Self-Employed and Pensionless Employed

What congressional bills would make the existing law more equitable?

A counterpart to Section 165(a) is the "Individual Retirement Act"—H. R. 10, 11, 2692, and 6114, 83rd Congress, the Jenkins (Reed)-Keogh-Camp-Elliot bills . . . identical bipartisan bills.

Would H. R. 10 and 11 amend the Social Security Act?

No; but it would amend the internal revenue law. Hence it should not be confused with proposed changes in the Social Security Act. Section 165(a) does not require OASI coverage for approval of a pension plan.

What do these bills provide?

Self-employed and pensionless employed persons would be permitted to set aside, tax-free, a limited portion of their earned incomes into individual retirement funds; taxes will be paid

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Prepared by Frank G. Dickinson, Ph.D., Director, Bureau of Medical Economic Research, American Medical Association.

upon the withdrawal (usually as pensions) of these funds. The result would be tax deferment similar to that on employers' contributions to tax-exempt plans approved by the Bureau of Internal Revenue under Section 165(a).

What portion of earned income may be excluded from taxation?

Ten per cent of earned income (but no more than $7,500) may be excluded annually. Furthermore, a lifetime limit of $150,000 would, in effect, prevent financing a pension of more than $1,000 a month starting at age 70.

Into what fund must this tax-excluded income be paid?

Into a restricted retirement trust fund or to an insurance company as premiums for a similarly restricted retirement annuity contract.

When may the money be withdrawn?

Upon attainment of age 65, or upon permanent and total disability (or death). Withdrawals are taxable income.

How may the accumulated money be withdrawn from the restricted trust fund?

In a lump sum or in installments.

D. Who Is Supporting These Bills?

What national organizations testified in favor of these bills at the hearings before the House Ways and Means Committee on Aug. 12, 1953?

Among the larger groups were: the American Bar Association, American Dental Association, American Farm Bureau Federation, American Federation of Television and Radio Artists (A. F. of L.), American Guild of Musical Artists (A. F. of L.), American Institute of Accountants, American Medical Association, American Nurses' Association, American Osteopathic Association, American Taxpayers Association, American Veterinary Medical Association, Associated Actors and Artistes of America (A. F. of L.), Association of Stock Exchange Firms, Authors League of America, Inc., Bureau of Salesmen's National Associations, Engineers Joint Council, Investment Council Association of America, National Association of Investment Companies, National Association of Men's Apparel Clubs, Inc., National Association of Women's and Children's Apparel Salesmen, National Council of Salesmen's Organizations, Inc., National Food Brokers Association, National Funeral Directors Association of the United States, Inc., National Shoe Travelers Association, and National Society of Professional Engineers.

Do all of the above associations agree with the A. M. A. position against OASI coverage of their self-employed members?

No. But all are in complete agreement upon the need for this individual retirement act.

What other national organizations testified against the bills or for extensive amendments?

Believing in universal Social Security coverage, the American Federation of Labor opposed H. R. 10, 11, etc., as "preferential tax treatment" for groups opposing OASI; three A. F. of L. unions, however, testified in favor of these bills. The American Life Convention, Life Insurance Association of America, and National Association of Life Underwriters, while apparently supporting the general principle of the proposed legislation, proposed sweeping amendments that would change the basic purpose and scope of these bills.

E. Equity Under the Proposed Law

How would benefits compare *with tax-exempt Section 165(a) plans?*

Under these bills (H. R. 10, 11, etc.) the maximum pension would range from 16% to 32% of average annual earnings—an average pension of about $208 a month for a physician at age 70, $156 for a lawyer, $140 for a dentist—and a maximum of $1,000 a month. In contrast, benefits for tax-exempt pension plans approved under Section 165(a) of the 20 largest employers in the United States range from 34.6% to 53.2% of average annual earnings. Section 165(a) specifies no maximum pension, no maximum annual tax-free contribution. Three-fourths of the newer approved plans permit maximum pensions *above* $1,000 a month starting at age 65, not age 70.

How would contributions compare?

Although the maximum (normal) contribution under these bills could be 10% of earned income, the estimated average contribution would be 1.1% of the earned income of all the self-employed. In contrast, the *average* contribution under Section 165(a) is now 4.6% of payroll, with no maximum set by law. The 10% and other limits in these bills (H. R. 10 and 11, etc.) are too restrictive to be imposed upon employer contributions to the 20,000 approved tax-exempt plans because they would cripple these plans. A large employer needs elbow room to provide reasonable pensions for young and old, men and women, plant and office employees. Under tax-exempt pension plans some employers have actually contributed in one year as much as 200% of an employee's annual compensation—often for past-service credits.

How would time of taxation compare?

Under these bills, the money placed into the Restricted Retirement Fund or Annuity and the interest accumulated are excluded from taxable income until withdrawn as benefits. Similarly, under Section 165(a) the funds set aside by the *employer* for pension purposes (and interest accumulated) are not taxed until received by employees, usually as retirement income.

How would revenue loss compare?

The 3 billion dollars a year paid by employers into approved pension (and profit-sharing) plans is considered as business expense, not as taxable income. Estimates indicate that the self-employed under H. R. 10 and 11 would exclude about 200 million dollars a year, one fifteenth of the amount excluded by approved plans; no estimate has been made for the pensionless employed. The pensions when received will be taxable. Tax deferment is not tax avoidance.

How may older earners prepay their pensions?

A provision in these bills (called Special Rule) for those *now* age 55 and over would permit more than 10% (depending on attained age) of earned income to be set aside for retirement—a modest counterpart to the past-service credits incorporated into many tax-exempt pension plans approved under Section 165(a).

Do these bills provide the counterpart to other fringe benefits?

No. Although fringe benefits, such as pensions, free life insurance, and free health insurance premiums, amount to 18.7% of compensation of eligible employees, H. R. 10, 11, etc., are concerned *only* with the matter of obtaining tax-deferment equity on prepaid pensions for both the *self-employed* and the *pensionless employed.* Many of the pensionless employed, however, now enjoy some of these other fringe benefits that the self-employed do not have.

F. Is There Another Way to Restore Equity and Encourage Prepaid Pensions for All?

Would incorporation restore equity?

If physicians and others could incorporate, as officers and employees of their corporations they could establish, for their own benefit, pension plans to be approved under Section 165 (a). But law and custom make this easy solution impossible. Professional men must be responsible for their acts and not hide behind the mask of a corporate structure, and the business of most farmers and salesmen is usually on too small a scale to warrant their incorporation.

Could the pensionless employed force their employers to establish pension plans?

Although many pensionless employed serve a particular employer for brief periods of time, especially in the entertainment industry, with the result that the employer has no interest in establishing a pension plan, the sponsors of H. R. 10, 11, etc., hope that this bill will stimulate the growth of corporate pension plans in coming years.

Would repeal of Section 165(a) restore equity?

Repeal of Section 165(a) as a method of obtaining equity for the self-employed and the pensionless employed would be a cruel and nonprogressive step to destroy this rapidly growing plan for old-age protection. The only reasonable solution is to provide the self-employed and pensionless employed the same tax-deferment advantages and privileges as are now enjoyed by those covered by pension plans under Section 165(a). H. R. 10 and 11, the "Individual Retirement Act," will provide the means to restore equity; prepaid financial security would then be possible for *all* Americans. A generation after this pending legislation is enacted, much of the need for nonprepaid pensions for an aging population will have been met by prepaid pensions. This is what OASI was supposed to do, but has not. Perhaps it never could. For it may be inherently impossible for a government operated program to achieve prepaid pensions for all. The wiser program may be for the government to provide the maximum encouragement for private pension plans, both individual and group.

CIVIL DEFENSE

Following is the second of a series of three articles on medical civil defense plans that have been prepared for the state of Maine. These plans are being published as samples for those states that have not as yet completed this phase of medical civil defense planning.—Ed.

Plans for Special Weapons Defense.
Part II: Radiological Defense Plan

I. RADIOLOGICAL DETECTION PROCEDURES

It has been deemed advisable to organize, equip, and train five "Radiological Detection Units," which can be attached to the State Mobile Reserve Battalions. The University of Maine and Bates, Bowdoin, Colby, and Ricker colleges were each asked to sponsor one Radiological Detection Unit. Since more than one of these units may be sent into the same major disaster area, it was deemed of utmost importance that these units have the same equipment and that they use the same techniques in obtaining data and that the same standards be used for interpreting the results. Therefore, Prof. Frederick B. Oleson, of the University of Maine department of physics, who took the five week course conducted by the Atomic Energy Commission in the spring of 1950 at Long Island, N. Y., was charged by the State Civil Defense and Public Safety Director and the State Deputy Director no. 3 with devising the Table of Organization and Equipment for these Radiological Detection Units and with outlining the course of instruction and training program to be carried out.

A. Table of Organization for each Radiological Detection Unit.

1. Administrative Staff:

a. Commanding officer or leader of each unit. (A professor from the Department of Physics or Radiology)

b. Deputy Commander or alternate leader. (A professor from the Department of Engineering or from the Physics or Chemistry Department)

c. Additional staff to consist of:

1'. Radiologist (medical liaison and consultant)

2'. Supply officer and an assistant supply officer. (Someone from Engineering Department or one who is familiar with maintenance and calibration of instruments)

3'. A biologist and an assistant

2. Three Monitoring Squads consisting of two men each (plus alternates)

a. High school science teachers

b. Scientifically trained personnel familiar with the instruments

B. Table of equipment.

1. Film badges. These devices are useful in the training of monitors where radioactive sources are used in field exercises with instruments. They are not as practical for war emergency as they cannot be stocked and they require specialized equipment for interpretation. Film badge service from some competent organization such as Tracerlab, Inc., of Boston is probably the best solution.

2. Pocket dosimeters. With the self-reading type, monitors can read the accumulated dosage at any time. For training purposes the 0-200 mr. range is best. Higher ranges of 0-20 r or 0-100 r would be more useful in an actual emergency. Proper charging equipment is necessary with these instruments.

3. High Level meters. Survey meters that show the rate of dosage are the instruments of choice for monitoring under war caused emergency conditions. Portable ionization chamber types include such instruments as the Juno, Cutie Pie, Radiac SU-10, Jordan model AG-500 and El-Tronics model SID-1.

4. Medium Range meters. The recently developed light weight survey meters, such as the CD V-710 or the Jordan AG-50, are likely to prove most useful.

5. Low Level survey meters. The portable Geiger Mueller CDV-700 or its equivalent.

a. The low level meter is most useful in monitoring personnel, and food and water for possible contamination with unfissioned radioactive materials.

b. This type of meter saturates in fields of less than 1 r/hr. and, therefore, is of little practical value for terrain survey purposes during the early stages after a bomb attack.

6. Atomic Weapons Handbook (Atomic Energy Commission, Publishers. Available from the U. S. Government Printing Office, Washington, D. C.).[1]

7. Maps of probable target areas with overlays. It is very desirable to have these on a uniform scale, preferably the same for all states.

8. Communications equipment. A suitable number of walkie-talkie units for the unit's monitoring teams and equipment to communicate with headquarters.

9. Protective equipment. Clothing that can be discarded if contaminated, gloves, overshoes or rubbers, dust or gas masks and first-aid supplies, and equipment for nerve or other types of war gases that might be encountered by members of the monitoring teams.

C. Duties of the Administration Staff of each of the Radiological Detection Units.

1. Development of plans and organization.

2. Direction of the headquarters staff and the monitoring teams associated with the Radiological Detection Unit.

The State Medical and Special Weapons Defense Deputy Director and his Radiological Defense Staff followed quite closely the basic principles outlined by Dr. George M. Lyon, consultant, Council on National Emergency Medical Service of the American Medical Association, when the Radiological Section of the Maine State Special Weapons Defense Plan was formulated.

Dr. Stafford L. Warren, member, Council on National Emergency Medical Service of the American Medical Association, reviewed this article before publication.

[1] Other publications on this subject are: Safe Handling of Radioactive Isotopes, Handbook No. 42, National Bureau of Standards (March 30) 1949. Effects of Atomic Weapons, Bulletin 17740, Department of Defense and Atomic Energy Commission, June, 1950. *Health Services and Special Weapons Defense*, Bulletin 944, Federal Civil Defense Administration Publication AG-11-1 (Dec.) 1950. Armed Forces Handbook of Atomic Weapons for Medical Officers, Departments of the Army, the Navy, and the Air Force, June, 1951. Andrews, H. L.: *Armed Forces Special Weapons* Project, Essentials of Instrumentation, Radiological Defense Manual (Medical Aspects of Nuclear Energy) **3**: 77-86, 1949. Civil Defense Against Atomic Warfare, a Selected Reading List, List of Official Reports of Atomic Energy Commission and Other Government Agencies, Together with Significant Book and Periodical Publications, Bulletin 12358, Prepared for the National Security Resources Board by the U. S. Atomic Energy Commission (March) 1950. What Every Maine Doctor Should Know About the Medical Aspects of Atomic Weapons and Atomic Warfare, by Committee on Emergency Civilian Defense of Maine Medical Association, J. Maine M. A. **41**: 144 (May) 1950; **41**: 205 (June) 1950. What Every Maine Doctor Should Know About the Defense Against the Atomic Bomb, by Committee on Emergency Civilian Defense of Maine Medical Association, J. Maine M. A. **41**: 284 (July) 1950. State of Maine: Health Services and Special Weapons Defense (May) 1953. Lyons, G. M.: Civil Defense Planning and Organization with Special Reference to Medical and Health Services, Including Radiological Defense, and Some Aspects Of Medical Planning In Civil Defense, papers presented at Regional Meeting of The Council on National Emergency Medical Service, 1950.

3. Medical liaison.

4. Establish and maintain communication between the monitoring squads and the headquarters of the unit, as well as with local, county, and state directors.

5. Reduction, plotting, and evaluation of monitoring data. Mapping of isodose areas and keeping them on a current basis through the rapidly changing conditions of the early post disaster phases. Of special significance is the determination and dissemination of information on "stay-times" in contaminated areas important to disaster operations.

6. General supervision of personnel monitoring. While all exposure should be avoided, some must be taken on the basis of a "calculated risk." The limit for an individual has not been firmly established and varies from 25 r to 50 r, 75 r, and even 100 r per day according to the authority. For example, in Civil Defense Technical Bulletin 11-1, dated March, 1952. the statement is made that "In emergency operations . . . one should not hesitate to accept an exposure to the whole body of 25 r in a single day." On the other hand, the State of California, Office of Civil Defense, on Sept. 28, 1953, issued Bulletin #118 Revised, in which they indicated that the "maximum allowable dosage for the first 24 hours is 25 roentgens."

D. Duties of the Monitoring Squads.

1. Carry the following equipment:

a. Film badge if available for practice exercises.

b. Pocket dosimeter, for practice exercise—range 0-200 mr. During actual emergency operations the higher range would be necessary.

c. One high level meter of the ion chamber type. (Must be calibrated against proper standards at the central laboratory.)

d. One medium level instrument of the CD V-710 type. This promises to be the most convenient and lightest of the survey meters.

e. One low level instrument of the Geiger-Mueller type (CD V-700). (This instrument must also be calibrated against standards at the central laboratory.)

f. Protective clothing; rubber overshoes, coveralls, gloves, and, if a low or underwater burst, a suitable mask should be worn. Wide masking tape serves as a dust-tight seal between coveralls and gloves or overshoes. In the event of a gas attack assault type masks should be worn and first aid equipment for chemical agents should be available.

2. Procure the necessary radiation data by the proper use of the above equipment. This will enable the administrative staff to plot areas that are dangerously contaminated. Also test food and water for radioactive contamination.

E. Training and Instruction.

1. To be effective, monitors should be familiar with the various instruments needed in an actual emergency.

a. Each monitor should be familiar with "Effects of Atomic Weapons" and other manuals prepared for his training.

b. Field exercises using communication equipment and survey meters to locate radioactive sources is very helpful. Cobalt 60 serves very well for this purpose.

2. Those persons with scientific background and who are familiar with radiation detection instruments will require little formal training. Those without this scientific background of experience will need instruction and training, particularly in the use of the instruments made available for use by the monitoring teams. Both groups will profit by practice in a standardized form of communicating data by radio or telephone.

3. The Unit Leader (under the direction of and with the assistance of the radiological defense officers at the state level) is responsible for the training and instruction of all members of his Detection Unit.

F. The first Radiological Defense Team was organized at the University of Maine and was under the leadership of Professors Frederick B. Oleson and Jonathan Biscoe, Department of Physics.

G. Radiological Detection Teams have also been organized as follows:

Location of Team	*Leader of Team*
Bates College	Prof. Karl S. Woodcock
Bowdoin College	Prof. Noel C. Little
Colby College	Prof. Sherwood Brown
Ricker College	Mr. Wendall R. Grant

The State Civil Defense Agency has equipped all of these five detection teams with Geiger counters, Radiac Survey Meters, Dosimeters and Walkie-Talkie units. A two-week shop training program has already been carried out for monitoring personnel at the University of Maine, July 6-20, 1951, and a sufficient quantity of radioactive cobalt is available for training purposes on loan from the Atomic Energy Commission.

An evening course under the direction of Karl S. Woodcock was offered during the winter of 1952-1953 at Bates college for training members of the radiological detection unit. Classes were held once a week for fifteen weeks. The classes were two hours or more long and consisted of lectures, laboratory work and the solving of problems. About 20 persons completed the course successfully.

II. RADIOLOGICAL DECONTAMINATION PROCEDURES

Conservation of manpower and supply economy are both of paramount importance in Civil Defense planning at the state, county and local levels. Therefore, the State Deputy no. 3 has recommended that the same personnel and equipment be used, with suitable modifications in technique, of course, whenever decontamination of personnel or of terrain may become necessary after the use by an enemy power of either radiological, chemical or biological warfare agents against the civilian population of this nation.

This section on Radiological Decontamination Procedures has been prepared by the Assistant State Deputy (Radiological) Director no. 3, Prof. Noel C. Little and his advisors. The recommendations and directions which follow are for the guidance of the Special Weapons Decontamination Units should they be confronted with radioactive contamination of personnel or of vital terrain immediately following an attack with atomic weapons.

General Remarks.—Radiological decontamination differs from ordinary chemical decontamination. It is impossible to destroy sources of radioactivity by chemical means as you neutralize an acid. Radioactive material must be removed or shielded until it decays to a harmless level.

The presence of radioactive contamination cannot be determined by visual inspection. Tests must be made by means of a Geiger-Mueller counter or other suitable detecting instrument. Such tests must be made both before decontaminating to detect the radioactivity and also afterward to assure that the radioactive material has been removed.

Radioactive contamination usually exists on the surface of objects. The general procedure is to scrub the surface clean or to remove the surface. It probably will not be feasible to decontaminate large areas such as might be subjected to spray from an underwater burst. Little residual radiation has been found to follow high aerial bursts. In general, persons and small objects will be subjected to decontamination.

Location of Decontamination Station.—Decontamination stations should be set up as near the center of the bomb burst as the radioactive monitoring teams indicate is safe. As radioactive surveys are completed, these stations should be moved progressively nearer the center of the explosion. The aim should be to make the quarantined area small as promptly as possible.

Protection of Decontaminating Personnel.—Old clothing which may be discarded is sufficient protection for personnel engaged in decontaminating. Such personnel should wear rubbers over their shoes and rubber gloves. Those engaged in handling radioactive material should: (a) keep fingernails cut short, (b) refrain from eating or smoking when on duty, (c) before leaving decontamination center, take off rubbers, (d) wash rubber gloves before removing, (e) utilize available counting facilities to test for contamination.

Arrangement for Decontamination Center.—Charts 3 and 4 in the Biological Warfare Section, previously published in The Journal, Oct. 31, 1953, pages 862 and 863, show a mobile layout for decontamination work. At present this state plan contemplates the use only of mobile decontamination units. Decontamination areas within buildings or other fixed structures are not recommended. At the initial mobile unit testing space, those found uncontaminated leave as shown by the exit to the safe area. Those found contaminated follow the arrows to the next space where the outer clothing is removed and the hands and face are washed. Contaminated clothing is stored in metal ash cans or barrels. A second testing will indicate whether the individual goes out to the dressing room, or goes to the showers. Coming from the showers, he is tested again and may exit, or return for more decontamination to the showers. Finally, after being cleared by the tester, he goes to the dressing room for clean clothes and then exits.

Specific Procedures.—Decontamination of tools.

Metal (blade of axe or shovel, wrench, crowbar)

1. Wash thoroughly with water. Should dangerous radioactivity still persist, and instrument be an essential item, it could be—
2 Swabbed with or dipped into nitric acid or organic acids, then—
   - *a.* Dumped in water bath or rinsed thoroughly with water. Unless tools are carefully rinsed, dried, and oiled the surface will become corroded and would become subject to real contamination later and could not be removed except by grinding and polishing.
   - *b.* Wipe with rags
   - *c.* Dispose of rags
   - *d.* Test for radioactivity. If still contaminated, repeat. (If the emergency is great, there will be no time for anything more than a quick dip in water if available. Simple washing and wiping procedures will probably have to suffice for the acute phase of the emergency.)

Wooden handles

1. Wash with water. If still radioactive
2. Scrape with sandpaper. (A mechanical sander would probably be required. Avoid making dust; then
   - *a.* Wipe with damp cloth
   - *b.* Dump in water bath
   - *c.* Rewipe with rags
   - *d.* Dispose of rags
   - *e.* Test for radioactivity. If still contaminated, repeat.

Decontamination of Personnel

1. Shoes removed by attendant
2. Remove outer clothing and test individual for radioactivity
3. Hands washed by individual
4. Inner clothing removed by individual. Tested by attendant.
5. Take shower or wash self with damp rags
6. Test for radioactivity

7*a.* If not contaminated, dress in clothes found nonradioactive or in clean ones.

7*b.* If skin is contaminated, scrub affected part with tincture of green soap, sodium bisulfite, potassium permanganate, a detergent sequestering compound, or other cleanser. The scrubbing may have to continue until the skin is sensitive. Tests are made during this cleansing process.

Decontamination of Clothing

Clothing discarded at the decontamination center may be cleansed of radioactivity as follows:

- *a.* Stow in special containers (galvanized iron barrels) used only for this purpose.
- *b.* Carry to laundry or washing machines specially designated for this purpose only.
- *c.* Clothes are washed by persons who understand radioactive hazards.
- *d.* Test for radioactivity. If still contaminated, send through laundry again.

Determination of Radiation Hazard.—The measurement of radiation and the appraisal of the hazard is the duty of the radiological detection teams. In general, a dosage of 400 r received by the whole body is considered fatal to 50% of those exposed. A tenth of this dosage produces no serious injury. It is the dosage rate, however, which determines whether an area is safe or unsafe. Evaluation of the permissible rate will depend upon the nature of the explosion, analysis of the residual nuclear radiation, time factors, the type of test instruments used, and the general exigencies of the situation. Such evaluation is a technical matter which must be left to the specially trained teams.

Surface contamination tolerances likewise will be specified by the radiological detection team at the decontamination centers on the basis of attendant circumstances.

EMERGENCY EXPOSURES TO NUCLEAR RADIATION

Civil Defense authorities recognize that exposure to certain amounts of ionizing radiation will be accepted in some operational situations on a calculated risk basis along with other hazards of war. Trained medical personnel (radiological defense medical officers) will be responsible for evaluating the radiological situation in terms of human hazards and for advising the local civil defense director or his representative. The civil defense director must sufficiently appreciate the effects of radiation so that he will be able to utilize this advice in making operational decisions. Material contained in this bulletin is consistent with the thinking of the military and nonmilitary governmental and private authorities in this field.

As with any hazard, the cardinal principle must be: Avoid all unnecessary exposure. Training activities should involve no more than the maximum permissible exposure of 0.3 r (roentgens) per week; most of them can, and should be, carried out at exposures far less than this.

Most civil defense operations will be carried out under conditions of no radiation hazard. It will probably be unusual that any single task need involve large exposures. In emergency operations where appreciable amounts of radiation are present, one should not hesitate to accept an exposure to the whole body of 25 r in a single day.

Operational decisions may be guided by a consideration of the following statements. An acute dosage of 50 r to a group of persons will not appreciably affect their efficiency as a working unit. Acute dosage of 100 r will occasionally produce nausea and vomiting in some persons, but not to an extent that will render personnel ineffective as groups. Persons receiving an acute radiation exposure of 100 r or more should be relieved from duty, if possible, and a report made to the staff medical advisor within a week. It should be assumed that if working units receive acute radiation doses substantially above 100 r, they will rapidly become ineffective.

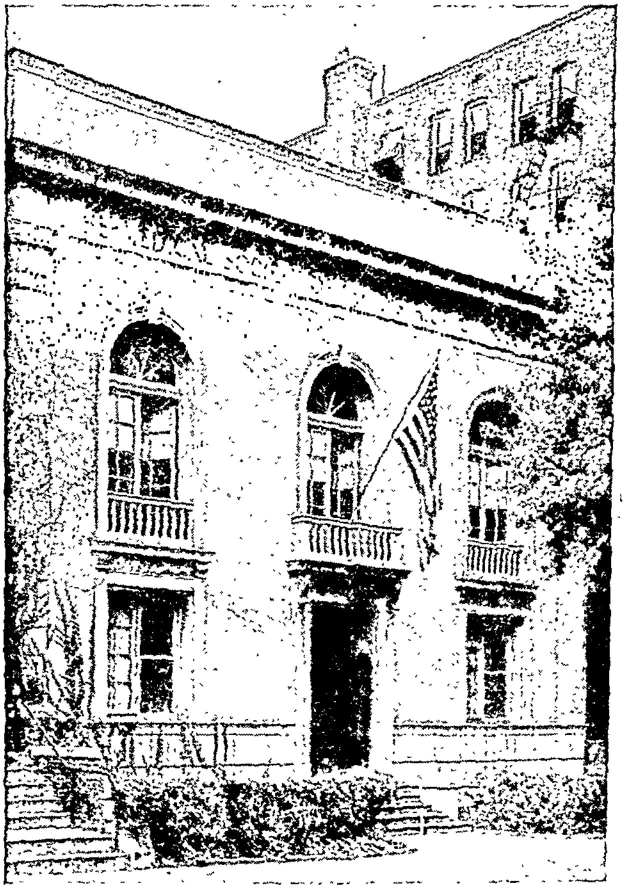
Acute dosage of approximately 150 r or greater can be expected to render personnel as a group ineffective in a few hours through a substantial incidence of nausea, vomiting, weakness, and prostration. Mortality produced by an acute dose of 150 r will be very low, and eventual recovery of physical fitness usually may be expected.

In civil defense work it may become necessary to make decisions regarding repeated exposures. The following statement from Civil Defense Technical Bulletin, TB-11-1, dated March, 1952, entitled "Emergency Exposures to Nuclear Radiation," may be used as a "rule of thumb" guide: "exposure of 25 r per day at weekly or longer intervals for a total of eight exposures (200 r) may be experienced without serious loss of efficiency due either to illness or significant general deterioration in health and ability. Before each probable reexposure, the degree of radiation damage already produced and that to be expected should be evaluated. Although not strictly true, to be on the safe side repeated daily exposures should be considered to be directly additive."

Neither the Atomic Energy Commission nor the armed forces have released any official data about exposure to thermonuclear explosions; hence it is impossible at this writing to say anything more definite about non-lethal exposures to this type of radiation. However, interested readers can find a fairly good discussion of the theoretical possibilities of thermonuclear explosions in an article entitled "What Every Maine Doctor Should Know About the Defense Against the Atomic Bomb," published in *The Journal of the Maine Medical Association*, July, 1950, page 284. No doubt more specific information of medical interest about thermonuclear experimentation will be released in due time.

MEDICAL SOCIETY OF THE DISTRICT OF COLUMBIA

On Sept. 24, 1817, there appeared in the Washington *National Intelligencer* an advertisement requesting the physicians of Washington and Georgetown "to meet at Tennison's Hotel on Friday, the 26th instant, at 11 o'clock, for the purpose of taking into consideration the organization of a medical society." Four years earlier the first recorded assembly of Washington physicians had been called to take action on the death of Dr. Benjamin Rush, one of the signers of the Declaration of Independence. In the interim so many medical charlatans had gained a foothold that a canvass of physicians disclosed the urgent desire for organization. The 16 physicians (nearly all those practicing in Washington and Georgetown) who met at Tennison's Hotel resolved: "The physicians attending this meeting deem it important and expedient to organize at once a society in the District for the promotion of medical science." That promotion followed, but relief from the charlatans did not. Congress was therefore petitioned for a charter that would prevent any but competent physicians from entering the practice of medicine in the District. The charter having been signed by President Van Buren on Feb. 16, 1819, a hall was rented for the use of the society and a library collected by donation and purchase.



The enthusiasm that led to the formation of the group spent itself within a short time, and so during 1825 and 1826 attempts were made to form another medical society to supersede the chartered organization. From 1831 to 1833, for want of a quorum at the annual meetings, the society apparently failed to elect officers. This breach of the charter provisions was overlooked in the era of good feeling that developed in 1834 but was brought to the attention of the society later at the trial of John Williams, who had been indicted for practicing medicine in the District of Columbia without a license from the medical board of examiners of the District. The defense won, chiefly on the contention that the society, having failed to hold its charter-required annual meetings, had not elected the medical board and had, in fact, gone out of existence.

Again Congress was petitioned, and a new charter, or act of reincorporation, was approved July 7, 1838. By its charter the society was allowed to promote and disseminate medical and surgical knowledge and to maintain a board for licensing of medical practitioners in the District but was forbidden to establish a schedule of medical fees or to regulate medical practice. A separate organization, the Medical Association of the District of Columbia, was therefore formed on Jan. 18, 1833, to overcome these handicaps by establishing a fee schedule and a code of ethics. The "History of the Medical Society of the District of Columbia" states: "Although composed of much the same membership, these two organizations, the society and the association, continued down to 1911 as two parallel but independent and complementary bodies forced by Congressional restrictions to exercise different and divided functions, all of which combined are required to constitute the complete powers and activities which properly pertain to a professional medical organization." The truth of this contention is manifested in the frequent examples of duplication, in which a member held the presidency (or other office) in the two organizations simultaneously. The groups often used the same meeting place, and it was not uncommon for the association to hold its meeting immediately after adjournment of the society, membership or licensure in which was for a long time a prerequisite for membership in the association.

Thus the society, which had been formed in 1817, and the association, founded in 1833, continued their parallel courses until July 10, 1911, when the two groups were merged to form the present Medical Society of the District of Columbia. The powers and functions of both bodies were transferred into the new and enlarged organization, whose object was stated as "the promotion locally and generally of the science and art of medicine and sanitation and the interests of the medical profession." Finding it impossible to obtain an acceptable charter from Congress, the society relinquished its corporate status and continued unchartered until May 24, 1924, when it was incorporated "for the purpose of promoting and disseminating medical and surgical knowledge and for no other purpose, and not for the purpose of establishing a medical school or schools" and was empowered "to own, mortgage and convey such property as may be necessary for its purposes and to make such rules and regulations as it may require and which may not be repugnant to the constitution or laws of the United States."

During the society's centennial in 1917, a movement was begun for a home building constructed with funds furnished by physicians and interested citizens. The present headquarters building, at 1718 M St., has been occupied since 1921. The building contains an auditorium seating 500, a library, and some of the offices of the society. About 15 years later, the society purchased the adjoining apartment building at 1710 M St., where it housed its medical bureau, a supplementary secretarial telephone service. The society, which now numbers more than 1,900 members, has an administrative staff of 10. Mr. Theodore Wiprud has been the first and only executive secretary since 1938. He now serves also as executive director and secretary. The telephone answering service employs 27 full-time and part-time operators. Among its other activities the society publishes the *Medical Annals of the District of Columbia*, a periodical established in 1932. The three day annual scientific assembly, which has outgrown the headquarters auditorium, is held at one of the larger Washington hotels and has an average registration of 3,000. The present officers of the society are Dr. Herbert P. Ramsey, president; Dr. Preston A. McLendon, president-elect; and Dr. Wallace M. Yater, editor.

CONFERENCE ON TRICHINOSIS

The Second National Conference on Trichinosis will open at 9 a. m., March 1, in the auditorium of the American Medical Association headquarters in Chicago, with welcoming remarks by Dr. George F. Lull, Secretary-General Manager of the American Medical Association, followed by the report of the secretary of the continuing committee, R. F. Willson, D.V.M., Detroit. L. R. Davenport, D.V.M., Illinois Department of Health, Springfield, Ill., will serve as chairman for a panel discussion entitled "Evaluation of Methods of Control of Trichinosis for the United States" which will include: "Refrigeration of Pork," Willard H. Wright, Ph.D., chief, Laboratory of Tropical Diseases, National Microbiological Institute, Bethesda, Md., and "Gamma Irradiation of Pork," H. J. Gomberg, Ph.D., Ann Arbor, Mich., and Sylvester E. Gould, M.D., Eloise, Mich.

Other presentations during the morning session include: "Meat Education Program," Mr. R. C. Pollack, general manager, National Live Stock and Meat Board, Chicago; "Review of Outbreaks of Trichinosis in the United States," James H. Steele, D.V.M., chief, Veterinary Public Health, U. S. P. H. S., Atlanta, Ga., "Observation on the World Pool of Trichinella," Norman R. Stoll, Sc.D., Rockefeller Institute of Medical Research, New York; and "Control of Trichinosis as a Public Health Measure," Herman N. Bundesen, M.D., president, Board of Health, Chicago.

The afternoon session will be devoted to study groups in public health, animal health, education, legislation, and research and organization and to a report of the study groups, which will be followed by general discussion and adoption of recommendations. A reception will be held at the Drake Hotel at 7:30 p. m. Dr. S. E. Gould, Eloise, Mich., is chairman of the continuing committee on trichinosis. Sponsoring organizations include the American Medical Association, American Dietetic Association, American Pharmaceutical Association, American Public Health Association, American Public Works Association, American Society of Clinical Pathologists, American Society of Parasitologists, American Veterinary Medical Association, Association of State and Territorial Health Officers, Conference of Public Health Veterinarians, International Association of Milk and Food Sanitarians, Michigan Memorial-Phoenix Project, University of Michigan, New York Academy of Medicine, United States Army, and the U. S. Public Health Service.

REGIONAL MEETING ON VETERANS' CARE

More regional conferences on veterans' medical care will be held during 1954 under the sponsorship of the A. M. A.'s Council on Medical Service through its Committee on Federal Medical Services. These meetings have a fourfold purpose: (1) to develop a working liaison with state society committees concerned with veterans' problems; (2) to acquaint an increasing number of physicians with A. M. A. policy and the facts regarding veterans' care; (3) to learn the local situation regarding this policy in various states, and (4) to discuss ways of carrying out the instructions of the House of Delegates, which adopted a firm stand on veterans' medical care at its meeting last June. The present schedule calls for meetings early in the year: Feb. 19, Denver; Feb. 21, Portland, Ore.; Feb. 27, Omaha; and in March, Boston and either Chicago or Indianapolis. Four similar conferences were held last year in Dallas, Texas, Atlanta, Ga., New York, and Washington, D. C.

RADIO AND TV PLANS FOR 1954

America's physicians will be "on the airways" more than ever during the new year as the A. M. A.'s Bureau of Health Education announces plans for new radio and television programs. In response to the trend of listening audiences toward local radio shows, emphasis will be placed on locally originated programs both on radio and on television. Present television plans call for a 30-minute film relating to some aspect of medical care, to be produced jointly by the Bureau and the Department of Public Relations. This film probably will be available about the time of the A. M. A.'s June meeting. In addition, several new sequences will be developed in the "What to Do" series—the five-minute TV films that star popular woman's commentator Nancy Craig explaining safe procedures to follow in home emergencies.

Inaugurating a new service for state and county medical societies, the Bureau also is planning the preparation of "script-clip packages" for television. These packets will contain outline scripts that can be narrated by local doctors while film clips illustrating the topic are shown on the TV screen. Regarding radio plans, the Bureau will concentrate on new electrical transcriptions during 1954. These will be released approximately at the end of April, June, and October. The first will be devoted to science and superstition, and other topics will be announced later.

A. M. A. EXHIBITS

By special invitation, the American Medical Association will display its exhibit "The Organs of the Human Body," at the Smithsonian Institution in Washington, D. C., during 1954. After this year, this exhibit will be available for showings in other museums throughout the country. A new exhibit, "The Physician's Responsibility in Highway Accidents," calls the doctor's attention to the fact that he should warn patients about the dangers of driving while under the influence of sedatives, antihistaminics, or anticonvulsive drugs. For professional showings only, this exhibit may be booked through the A. M. A.'s Bureau of Exhibits.

RURAL HEALTH CONFERENCES

The Council on Rural Health of the American Medical Association reports that State Rural Health Conferences will be held in the near future as follows:

Kentucky	March 10-11	Louisville, Ky.
Ohio	March 9-10	Columbus, Ohio
Washington	March 23-24	Yakima, Wash.
New York	March 25	Ithaca, N. Y.

The recent Colorado State–Rocky Mountain Regional Rural Health Conference was a great success. Sponsored by the Colorado State Medical Society, it was the first of its kind held in this country. Dr. Fred Humphrey, Regional Director for the Rocky Mountain states, and Dr. M. L. Tyler, chairman, rural health committee, Colorado State Medical Society, invited other regional states to send leaders, and all except one did so, with Montana having nine in attendance. States outside of the region having representatives were North Dakota, Oregon, and Nebraska. The program was excellent, and the interest and participation of the audience, it was said, "was the best we have seen anywhere."

MEDICAL NEWS

CALIFORNIA

Pediatric Clinic Established.—A pediatric clinic that was recently added to the services of St. Francis Memorial Hospital, San Francisco, will be open every Tuesday at 10 a. m. Under the supervision of the pediatrics committee of the hospital, with Dr. John M. Rector as chairman, the clinic will be in charge of a resident physician. Members of the committee will act as consultants on a rotating basis for two-month periods. A prerequisite for admission to the clinic will be (1) referral by a member of the medical staff or (2) being a child of an obstetric clinic mother. The charge per clinic visit will be $1. Charges for hospitalization will vary with the individual patient after consultation between the referring physician, the clinic consultant, and the hospital administration. Appointments may be made by calling the pediatrics clinic.

Symposium on Diabetes.—The second annual diabetes symposium will be held at the Los Angeles County Medical Association Feb. 3. Dr. Frederick W. S. Modern, Long Beach, president, Los Angeles Diabetes Association, will preside over the afternoon session, 2-5 p. m., and Dr. Edward Shapiro, Beverly Hills, president, Los Angeles Society of Internal Medicine, over the evening program, which will follow a 6:30 p. m. dinner meeting that is open to members and guests. Guest speakers include: (1) Dr. Alexander Marble, Joslin Clinic, Boston, who will present "Mucopolysaccharides in Diabetes" at 3:45 p. m. and "The Relation of Control of Diabetes to the Development of Vascular Complications" at 8 p. m.; (2) Dr. Meyer Friedman, Harold Braun Research Institute, Mount Zion Hospital, San Francisco, who will speak on pathogenesis of hypercholesteremia at 4 p. m.; and (3) Arne N. Wick, Ph.D., head of the Research Institute of Scripps Metabolic Clinic, La Jolla, who will summarize problems of metabolism in diabetes with the cooperation of Dr. Douglas R. Drury, chairman of the physiology department, University of Southern California School of Medicine, Los Angeles.

CONNECTICUT

Dr. Strong Goes to Buffalo.—Leonell C. Strong, Ph.D., who has been research associate at Yale University School of Medicine, New Haven, since 1933, has been appointed associate cancer research scientist at the Roswell Park Memorial Institute, Buffalo. Dr. Strong has received medals of merit from the universities of Louvain and Liége in Belgium and has lectured throughout this country and Europe on cancer and cancer research. Before becoming associated with Yale University, Dr. Strong served from 1930 to 1933 as research associate at the Roscoe B. Jackson Memorial Institute in Bar Harbor, Maine, and from 1927 to 1930 as associate professor of genetics and research associate in cancer at the University of Michigan Medical School, Ann Arbor.

Scholarship Program.—The Connecticut State Medical Society recently granted the first awards in its new scholarship program for medical students. The recipients of the $500 scholarships are Richard M. Demko, Rockville, who is studying at New York University College of Medicine, Francis Hobson, Plainville, at Meharry Medical College, Nashville, Tenn., and Michael L. Fezza, New Haven, at New York Medical College, Flower and Fifth Avenue Hospitals. Applicants must be fourth year students at an approved medical school and be recommended for scholarship consideration by the dean of their school, a Connecticut physician, and another resident other than a relative. Information concerning the program has been sent to all approved medical schools in the United States and Canada.

ILLINOIS

Psychiatric Lectures.—In its series on treatment in psychiatry, which is open without charge to all physicians, the North Shore Health Resort (225 Sheridan Road, Winnetka) offers a lecture "The Use of Shock Therapy and Psychosurgery" by Dr. Lothar B. Kalinowsky, attending psychiatrist at the New York State Psychiatric Institute, on Feb. 3, 8 p. m., at the health resort.

Ice Box Deaths.—Because of the increasing number of accidental deaths of children by smothering in discarded ice boxes, a new Illinois law prescribes a penalty of "not more than $50 fine or imprisonment of not more than 30 days, or both" for anyone who abandons or discards a refrigerator, ice box, or ice chest in a place accessible to children or who knowingly permits such an abandoned ice box to remain there without removing the hinges or door.

Chicago

Historical Exhibits.—John Crerar Library is presenting an exhibit by Drs. George Eisenberg and Louis D. Minsk on babies' feeding bottles and medicinal spoons, dating from 400 A. D. to the present. The University of Illinois College of Medicine is exhibiting ancient trepanned skulls and early American instruments in trepanation.

Symposium on Pediatrics.—Dr. John A. Bigler will serve as moderator for the following symposium that will be presented by the North Side branch of the Chicago Medical Society at the Drake Hotel, Feb. 4, 8 p. m.: "Heart Murmurs in Children," Dr. Stanley Gibson; "Convulsions in Children," Dr. Douglas M. Buchanan; "Neurological Manifestations in the Newborn," Dr. Abraham Levinson; and "Mental Retardation," Dr. Bigler. General discussion will follow. A fellowship gathering at 5:30 p. m. will precede dinner. For reservations, call CEntral 6-7764.

Parent-Teacher Meetings.—Dr. Samuel C. Henn is serving as moderator for the symposium "Our Responsibilities as Parents" that is being presented on the first Tuesday of the month (8 p. m. in the Chicago Vocational High School, 2100 E. 87th St.) by the Avalon Park Parent-Teacher Association in cooperation with the Chicago Board of Education. On Jan. 5, Dr. John S. Garvin discussed "Responsibilities in the Home," and, on Feb. 2, Dr. Helen C. Newman, physician of the laboratory school, University of Chicago, will discuss "Responsibilities in the School."

Lectures on Virology.—The Chicago Medical School, 710 S. Wolcott Ave., is offering this series Tuesdays, 12:30 p. m., in Amphitheater A. "The Nature of Viruses" was presented Jan. 12 by Dr. Salvador A. Luria, professor of bacteriology, University of Illinois, Urbana, and "The Pathogenesis of Virus Diseases" by Dr. John E. Kempf, professor of bacteriology, University of Illinois College of Medicine, Jan. 19. Other presentations will include:

Feb. 2, Development of Virus Vaccines, Albert Milzer.
Feb. 9. Epidemiology of Certain Virus Diseases, William I. Fishbein.
Feb. 16, Newer Knowledge of the Epidemiology of Influenza, Fred M. Davenport, Ann Arbor, Mich.
Feb. 23, Rabies, James G. Shaffer, Sc.D.
March 2, Survey of Recent Advances in the Laboratory Diagnosis of Virus and Rickettsial Diseases, Harry B. Harding.

Clinical Conference on Ophthalmology.—The Chicago Ophthalmological Society will hold a clinical conference Feb. 5-6 at the Drake Hotel. Symposiums and round-table luncheons on headache and surgery of the lids will be presented. Lectures include: "Technic and Results of the Recession Operation for Squint," "Lens Metabolism," "Dacryocystorrhinostomy," "Vertical Divergence of the Eyes and the Use of Prisms," and "On the Basis of Stereopsis in Binocular Vision." Participants include Drs. Percival Bailey, Benjamin Boshes, Fremont A.

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education and public health. Programs should be received at least three weeks before the date of meeting.

Chandler, Robert W. Keeton, and Francis L. Lederer, Chicago; Dr. Alston Callahan, Birmingham, Ala.; Dr. Charles E. Iliff, Baltimore; Dr. Placidus J. Leinfelder, Iowa City; Kenneth N. Ogle, Ph.D., Rochester, Minn.; and Dr. Kenneth C. Swan, Portland, Ore. At 5:30 p. m. Dr. Swan will deliver the 10th Gifford memorial lecture, "The Blind Spot Mechanism," to which all ophthalmologists are invited. The fee for the conference ($35) includes round-table luncheons. Registrar is Miss Maude Fairbairn, 8 W. Oak St., Chicago 10.

INDIANA

Hospital News.—Dr. Franklin G. Rudolph, Hammond, has given seven acres of land, one-quarter mile south of Youche Country Club, for the proposed 100-bed hospital for southern Lake County. The property is part of his farm.

Cardiac Symposium.—The fourth annual symposium on the heart, sponsored by the Indiana University School of Medicine and the Indiana Heart Foundation, will be presented at 2 p. m. Feb. 3 in the medical school auditorium on the Indianapolis campus. Guest speakers will be Dr. George E. Burch, Tulane University of Louisiana School of Medicine, New Orleans, who will discuss electrocardiography, and Dr. Fredrick J. Stare, Harvard School of Public Health, Boston, who will present certain aspects of nutrition as they relate to heart disease.

LOUISIANA

Symposium on Eye Infections.—The New Orleans Academy of Ophthalmology, Feb. 1-5, will feature the symposium "Infectious Diseases of the Eye." Those leading the symposium include:

Phillips Thygeson, San Jose, Calif., Virus Infections of the Lids and Conjunctiva. Bacterial Infections of the Conjunctiva.
Trygve Gundersen, Boston, Infectious Diseases of the Cornea.
Alson E. Braley, Iowa City, Allergy and Drug Sensitivity.
Hugh L. Ormsby, Toronto, Canada, Infectious Diseases of the Lids, Lid Margins, and Lacrimal Apparatus.
Michael J. Hogan, San Francisco, Infectious Diseases of the Episclera, Sclera, and Uveal Tract. Surgical Infections.
Gustav C. Bahn, New Orleans, Infections of the Orbit.
James H. Allen, New Orleans, Ocular Bacteriology.

The program will include round-table discussion periods. Registration fee of $75 includes associate membership in the academy for the year 1954.

Pathologists Meet in New Orleans.—The South Central Region of the College of American Pathologists, the Louisiana Association of Pathologists and the Louisiana Pathology Society will meet jointly at the Roosevelt Hotel, New Orleans, Feb. 5-6. Friday will be devoted to a seminar on forensic pathology, for which Dr. Stanley H. Durlacher, pathologist in chief, coroner's office, Parish of Orleans, will serve as moderator. Guest conductors will be Dr. Russell S. Fisher, chief medical examiner, state of Maryland, and Dr. Richard Lindenberg, Baltimore. On Saturday the following presentations will be made by New Orleans speakers:

Specific Diagnosis of Infections with Poliomyelitis Viruses, John P. Fox.
Pathologic-Physiology of the Kidney and Kidney Function Tests, Samuel B. Nadler.
Studies in the Pathogenesis of Idiopathic Thrombocytopenic Purpura, Charles C. Sprague.
Modern Methods for the Determination of Calcium, Roland A. Coulson, Ph.D.
Occurrence and Significance of Abnormal Hemoglobin, Eugene Kaplan.
Problems in the Laboratory Diagnosis of Strongolydiasis, Clyde Swartzwelder, Ph.D.
Semen Examination, Technique and Interpretation, Paul L. Getzloff.
Interpretation of the Testicular Biopsy, Albert Segaloff and William H. Sternberg.

MARYLAND

Research Fellowship in Hematology.—The department of clinical pathology, University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, has announced the establishment of a research fellowship in hematology made possible by a donation of $15,000 by Mr. Morris S. Corman in memory of Mrs. Anna Corman. Proceeds from the fund may also be used to invite distinguished investigators to lecture or hold seminars on hematological subjects. The lectures will be known as the Anna Corman lectureship.

MINNESOTA

Reduction in Tooth Decay in Grand Rapids.—Frederick Wertheimer, D.D.S., Lansing, chief of the public health dentistry section, Michigan Department of Health, reports a 67% reduction in tooth decay in Grand Rapids children since fluoridation of the city water supply was initiated in 1945. In the latest examinations completed this year, half of the 6-year-old children in Grand Rapids were found to be entirely free of decay in the six year molars. Before fluoridation the figure for this age group was 17%. The examination also revealed 90% less decay in the front teeth, and studies of the sites of cavities showed practically no decay on the smooth surfaces of teeth. A marked decrease was noted in the severity of decay. Decay in the teeth of children who had been drinking fluoridated water since birth was very mild in comparison with that found in children before fluoridation began. Cavities were generally smaller and required less extensive repair.

Personal.—Dr. Clifford G. Menzies, Iron Mountain, has been appointed director of the health center at Michigan State College, East Lansing. Dr. Menzies was formerly physician for the Ford Motor Company, the Kingsford Chemical Company, and the Aluminum Specialty Company, all in Iron Mountain.——Dr. Silas V. Dusseau, 85, was the central figure in Erie's annual VJ-Day celebration when he received a citation from the auxiliary of Erie Post 3925 of the Veterans of Foreign Wars, a good citizenship medal from the post itself, and a silver tray from Erie Township, whose health officer he has been for 40 years.——Dr. James M. Shaffer, assistant professor of epidemiology, University of Michigan Medical School, Ann Arbor, has been appointed director of the division of clinical investigation of McNeil Laboratories, Philadelphia. Dr. Shaffer, a research fellow at the University of Minnesota Medical School, Minneapolis, 1947-1948, was instructor in medicine and pharmacology at the school from 1950 to 1952. From 1948 to 1950 he served as captain in the U. S. Army Medical Corps.——Dr. Ferdinando A. Morin, Wayne University College of Medicine, Detroit, has been granted a three month leave of absence to conduct medical research at the universities of Padua and Pisa in Italy, where he plans to further international collaboration in the research field of central nervous system disorders, including epilepsy.

MISSISSIPPI

Society News.—At the annual meeting of the Mississippi Valley Medical Society the following officers were elected: Dr. Arthur S. Bristow, Princeton, Mo., president-elect; Dr. Harold Swanberg, Quincy, Ill., secretary-treasurer; and Dr. Jacob E. Reisch, Springfield, Ill., assistant secretary-treasurer. Dr. Norris J. Heckel, Chicago, is the 1954 president.

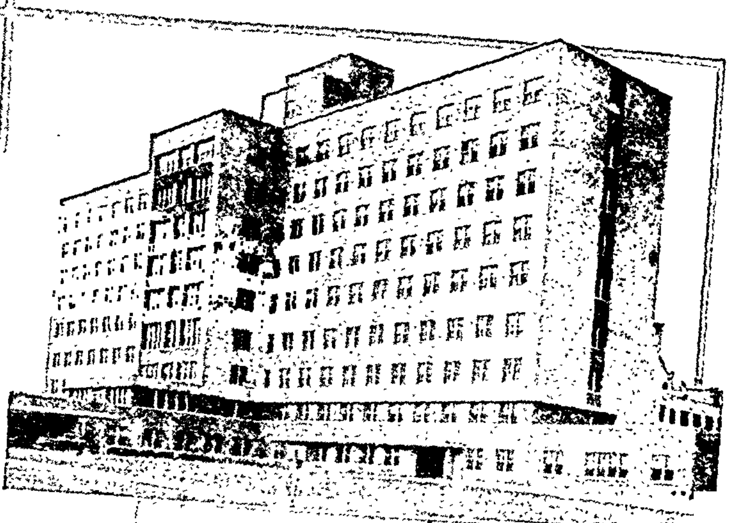
NEBRASKA

Society News.—At the annual meeting of the Omaha Mid-West Clinical Society, Dr. B. Carl Russum was installed as president. Dr. Frederick W. Niehaus was chosen president-elect, and Dr. Louis E. Moon remains secretary-treasurer.

State Society Accorded Pharmaceutical Honor.—The Formulary plan of the Nebraska State Medical Association received national recognition when the New York State Pharmaceutical Association selected Daniel F. Moravec, chief pharmacist, Lincoln General Hospital, who submitted the plan, as the winner of the first prize ($500) in a nation-wide contest to determine ways of overcoming economic problems resulting from the widespread duplication of medicinal products manufactured and sold under trade names. The Formulary plan of the Nebraska State Medical Association, which is approved by the Nebraska Pharmaceutical Association, includes the encouragement of the members of both associations to make use of the National Formulary in their practice; the initiation of an educational program by the state medical association for the purpose of pointing out advantages of prescribing by generic rather than copyrighted name; a general publicity program in the publications of both the medical and pharmaceutical associations; and the appointment of an active committee on revision of the formulary for the purpose of keeping abreast of progress in modern therapeutics.

NEW JERSEY HOSPITALS

Reading from top and left to right are Bergen Pines County Hospital, Paramus; Valley Hospital, Ridgewood; Our Lady of Lourdes Hospital, Camden; Burdette-Tomlin Memorial Hospital, Cape May Court House; Riverview Hospital, Red Bank; Fitkin Memorial Hospital, Neptune; Overbrook Hospital, Cedar Grove; Newton Memorial Hospital, Newton; and Hunterdon Medical Center, Hunterdon County.



NEW JERSEY

New Jersey Hospitals Built with Hill-Burton Aid.—The state of New Jersey has just published a progress report on hospitals constructed in the state with the aid of the Federal Hospital Survey and Construction Act (Hill-Burton). Reprinted from this report on the opposite page of this issue of THE JOURNAL are pictures of some of these hospitals. The Hill-Burton act was passed in August, 1946, and in January, 1948, the first New Jersey state plan for the construction of hospitals and health centers received the approval of the U. S. Public Health Service. When the state progress report was published in 1953, allocations of federal grants-in-aid had been made to 27 hospitals. Since then a small health center at North Arlington has been approved and is now in the planning stage. The federal grants-in-aid for these projects vary between 33⅓% and 40% of the approved project costs. The encouragement given by the Hill-Burton act in New Jersey is borne out by the fact that more than 5,000 hospital beds, together with auxiliary services, will be built as a result of the program, not including some 1,300 beds in the fourth state mental hospital at Ancora, which has been approved by public referendums. Many of the hospitals built under the Hill-Burton program could not have been built without such assistance.

The Bergen Pines County Hospital, the first one at the top of the picture on the opposite page of THE JOURNAL, is one of the few county general hospitals in New Jersey. The federal participation in this project was in the chronic facilities only, which provides 124 beds on the fifth and sixth floors. The entire hospital provides 363 beds, including medical, surgical, mental, chronic, and outpatient facilities. While there are no delivery or labor rooms, the building contains an unfinished portion that could be completed for these services. The Valley Hospital at Ridgewood, the first one shown below and to the left of the Bergen Pines County Hospital was realized after 26 years of effort. It is a completely new 124-bed general hospital in an area that formerly was without hospital facilities. The Fitkin Memorial Hospital at Neptune shown on the opposite page with the two arrows on the roofs was partially completed before the project was picked up for federal participation. This project consisted of the addition of two wings, indicated by the arrows, to the existing facilities. The two-story rear wing provides interns quarters, a morgue, storeroom, and other facilities. The entire structure has 251 hospital beds.

The New Jersey plan for the construction of hospitals is revised annually. While much has already been done, a great deal remains to be done. By the year 1960 the State Department of Institutions and Agencies estimates 10,246 additional hospital beds will be needed. As of Nov. 30, 1953, 44 construction projects were being planned but had not been reduced to applications, and at that time there were 30 projects on which either plans or applications for grants-in-aid had been received and 17 projects under construction. According to the state report for November, the total cost of the 77 projects anticipating hospital construction will be close to 100 million dollars.

NEW YORK

All-Day Program on Cardiovascular Diseases.—A graduate teaching program on cardiovascular diseases, available without charge to all physicians within commuting distance, will be held Feb. 4 at the Albany Law School in Albany, under the sponsorship of the Heart Association of Albany County, Albany County Medical Society, Albany Medical College, Veterans Administration Hospital, and the New York State Department of Health. The guest speakers include:

Harry Goldblatt, Cleveland, Renal Aspects of Hypertension.
William Goldring, New York, Definition and Clinical Course of Hypertensive Disease.
A. Stone Freedberg, Boston, Use of Radioactive Iodine in Coronary Heart Disease.
Paul M. Zoll, Boston, Management of Coronary Heart Disease.

The guest speakers will be joined by four local physicians for panel discussions on hypertensive disease at the end of the morning session and on coronary heart disease at the end of the afternoon program.

Seventh Gordon Lecture.—Zeta Chapter of Phi Delta Epsilon Fraternity at the State University of New York College of Medicine at Brooklyn (formerly Long Island College of Medicine) is sponsoring the seventh annual Murray B. Gordon lecture Feb. 2, 5:15 p. m., at the Polhemus Memorial Clinic, 350 Henry St., Brooklyn. Dr. Frederick A. Mettler of the department of neurology, Columbia University College of Physicians and Surgeons, New York, will discuss "Newer Aspects of Involuntary Movement."

New York City

Meeting on Arteriosclerosis.—Dr. David P. Barr, professor of medicine, Cornell University Medical College, will serve as moderator for a panel discussion Feb. 5 on current concepts in the management of arteriosclerosis, with Dr. David Adlersberg, Dr. William Dock, Forrest E. Kendall, Ph.D., and Dr. Charles F. Wilkinson Jr., as participants. This is one of a series of monthly panel meetings on therapeutics for the general physician, given at the New York Academy of Medicine, Fridays, 4:30 p. m.

Cancer Meeting.—The New York Cancer Society will present the following program on physiological alterations in cancer Feb. 2, 8:30 p. m., at the New York Academy of Medicine, Fifth Avenue at 103rd St.:

Metabolic Observations in Cancer Cachexia, Robert Elman, St. Louis.
Alterations in Gastrointestinal Tract Physiology Following Gastrectomy for Cancer of the Stomach, Henry T. Randall, Kathleen E. Roberts, Gordon P. McNeer, George T. Pack, and Jacob Weissman, New York.

Discussion will be by Dr. Isidor S. Ravdin, University of Pennsylvania Hospital, Philadelphia. All physicians and medical students are cordially invited.

Hermann Biggs Lecture.—Alfred C. Kinsey, Sc.D., professor of zoology, Institute of Sex Research, Indiana University, Bloomington, will deliver the 29th annual Hermann M. Biggs memorial lecture, under the auspices of the committee on public health relations of the New York Academy of Medicine, Feb. 4, 8:30 p. m. His subject will be "Data on Female Sexual Behavior: Their Application in Clinical Medicine and Public Health." Discussants will be Dr. Sophia J. Kleegman, associate clinical professor of obstetrics and gynecology, New York University School of Medicine; Carney Landis, Ph.D., professor of psychology, Columbia University, and George P. Murdock, Ph.D., professor of anthropology, Yale University, New Haven, Conn.

Forensic Medical Meeting.—Hon. Henry Clay Greenberg, justice, Supreme Court, State of New York, will present "The Medical Witness and Medical Testimony in Negligence and Malpractice Cases" Feb. 1, 8:30 p. m., in the main lecture hall, New York University College of Medicine (477 First Avenue, near 28th St.). Discussants include Mr. William F. Martin, counsel, Medical Society of the State of New York; Mr. Harry A. Gair; Dr. Thomas M. D'Angelo, Jackson Heights, N. Y., malpractice and insurance board, Medical Society of the State of New York; Dr. Henry K. Taylor, professor of clinical radiology, New York University College of Medicine; and Delmar Karlen, visiting professor of law, New York University School of Law. A question period from the audience will follow. Dr. Maxwell H. Poppel, professor of radiology, New York University College of Medicine, will preside. Members of the medical and legal professions are cordially invited.

Hospital News.—A number of vacancies are available for the positions of resident and assistant resident on the house staff and also for those of clinical assistant and assistant visiting physician on the visiting staff on the second medical and neurological service of the Goldwater Memorial Hospital, a hospital for chronic diseases with special facilities for the study of geriatric medicine. Application forms may be obtained from Dr. Benjamin Jablons, Acting Director, Second Medical Division, Goldwater Memorial Hospital, Welfare Island 17.——Montefiore Hospital for Chronic Diseases was given one of the first two William J. Shroder memorial awards by the Council of Jewish Federations and Welfare Funds, which held its general assembly in Cleveland, Nov. 22, 1953. The award, a plaque with an inscribed silver scroll was made "for superior initiative and achievement in the advancement of social welfare." It was given in recognition of the home care program inaugurated in 1927 through which more than 700 patients have received more than 200,000 days' care, thereby (1) cutting the medical expenses of the patient and the cost to the hospital for those patients unable to pay, (2) releasing beds needed for more seriously ill patients, and (3) diminishing the need for costly construction of additional facilities.——Dr. Alexander Brunschwig, professor of clinical surgery, Cornell University Medical College, will present "Experiences in Excision of Primary and Secondary Tumors of the Liver" Feb. 5, 3 p. m., at Montefiore Hospital for Chronic Diseases.

OHIO

Society News.—The Academy of Medicine of Cincinnati will have as guest speaker on Feb. 2, Dr. John H. Mulholland, professor of surgery, New York University College of Medicine, whose topic will be "Benign Diseases of the Pancreas." On Feb. 16 the academy will present the symposium "Management of Massive Hemorrhage" for which Dr. Paul I. Hoxworth, Cincinnati, will serve as moderator. Participants will be Drs. Stanley O. Hoerr, Cleveland, John D. Stewart, Buffalo, and Leon Schiff, Cincinnati.

Personal.—Dr. Addison L. Kefauver, Columbus, has been appointed medical director of the Industrial Commission of Ohio to succeed Dr. Robert M. Andre, who has been named medical director of the Goodyear Atomic Corporation plant in Pike County. Dr. Kefauver had been assistant to Dr. Andre for 12 years.——Dr. John J. Phair, professor of preventive medicine, University of Cincinnati College of Medicine, has been reelected secretary of the section on epidemiology of the American Public Health Association and of the Conference of Professors of Preventive Medicine.

OREGON

Postgraduate Courses.—The University of Oregon Medical School, Portland, announces that the winter and spring postgraduate series will open Feb. 1 with a three day course in obstetrics and gynecology. Dr. Alec M. Agnew, clinical professor and chairman of the department of obstetrics and gynecology at the University of British Columbia, Vancouver, will be guest lecturer. A general surgery course (registration limited to 20) will be given March 1-5. Dr. Garfield G. Duncan, clinical professor of medicine, Jefferson Medical College of Philadelphia, will lecture to the group studying metabolism and endocrinology, March 8-10. A course on dermatology, March 29-31, will be followed by a course on cardiology, featuring Dr. J. Scott Butterworth, associate professor of medicine, New York University College of Medicine, as principal speaker.

PENNSYLVANIA

Infectious Hepatitis.—According to the U. S. Public Health Service, Dr. J. D. Purvis, Pennsylvania Department of Health, has reported several outbreaks of infectious hepatitis. In one small community the disease is considered to have been spread through contacts in school busses, 40 cases resulting. In another area an outbreak began the middle of last October, and cases are still occurring. Cases have been concentrated in one town, but scattered cases in the county and surrounding counties have been reported. A total of 125 cases have been reported. In a third community, 100 cases and 100 suspect cases were noted from April through November, 1953. With the opening of school, cases began to increase, but gamma globulin inoculations brought the outbreak under control. The fourth outbreak, consisting of 156 cases throughout 1953, occurred in another area.

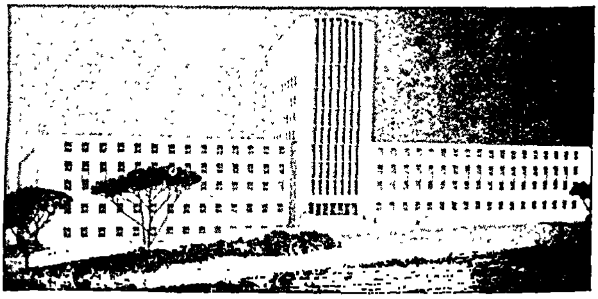
Philadelphia

Irvine Page to Give Hatfield Lecture.—On Feb. 3, 8:30 p. m., the College of Physicians of Philadelphia will present the Nathan Lewis Hatfield lecture. Dr. Irvine H. Page, director of research, Cleveland Clinic Foundation, will discuss "The Nature and Treatment of Hypertension."

Pittsburgh

Fifteen Million Dollars Given to Medical School.—The chancellor of the University of Pittsburgh announced on Jan. 18 the receipt of an endowment grant of 15 million dollars to the medical school, to build a strong full-time faculty as a supplement to the present staff of part-time faculty members. The gift, made jointly by the A. W. Mellon Educational and Charitable Trust, the Sarah Mellon Scaife Foundation, and the Richard King Mellon Foundation, all of Pittsburgh, will be used to support broad innovations in medical teaching proposed by Dr. Robert A. Moore, recently appointed vice-chancellor in charge of the schools of the health professions (The Journal, Dec. 19, 1953, p. 1455). Dr. Moore stated that the grants will make possible a development that will provide in the highest degree "three principal objectives: education of practitioners, research to discover new knowledge of the cause, prevention and cure of disease, and patient care." His program involves improvements in the organization and operation of the school of medicine, establishment of closer liaison between that school and the schools of public health, nursing, pharmacy, and dentistry, and the coordination of these five schools with the center hospitals and related clinics and institutions.

Although the grant is the largest received by the university in its 167 year history, Chancellor R. H. Fitzgerald pointed out that an additional 15 million dollars must be obtained during the next five years to complete the program projected by Dr. Moore and that the present gift is not related to the current fund-raising program to permit construction of a new 15 million dollar building to house the schools of medicine, nursing, dentistry, and pharmacy. During the past year more than 7 million dollars has been subscribed to this objective by Pittsburgh industries and an additional 2 million dollars is available from a previous campaign.



Architect's drawing of the new building that will house the University of Pittsburgh's schools of medicine, nursing, dentistry, and pharmacy. It is expected that construction will begin next summer.

Lowell J. Reed, Ph.D., president of Johns Hopkins University, Baltimore, principal speaker at the dinner, hailed the gift as a demonstration of private enterprise contributing to the future welfare of the country, commenting, "It has been recognized by many educational and research surveys that this country will suffer irreparable loss if the private universities are not provided with the facilities that will enable them to grow in scope and excellence. Unless we want these institutions to be tax-dominated, private enterprise and capital must find their way of supporting higher education." Other speakers included Joseph C. Hinsey, Ph.D., director of the New York University-Cornell Medical Center, and Dr. William S. McEllroy, dean of the Pittsburgh School of Medicine.

The school was founded in 1886 as the Western Pennsylvania Medical College and in 1892 became the Medical Department of the Western University of Pennsylvania. In 1908, the Western University of Pennsylvania became the University of Pittsburgh and the affiliated medical college became the school of medicine. The present physical facilities of the university's health center have an estimated valuation in excess of 80 million dollars. Much of the growth has occurred during the past seven years, during which 30 million dollars has been made available for construction of the center in addition to the present 15 million dollar endowment grant.

RHODE ISLAND

Anesthesiologists Meet in Providence.—The New England Society of Anesthesiologists will meet Feb. 5 at the Rhode Island Hospital, Providence. The morning session will be devoted to the operative schedule, demonstration of pressure breathing apparatus, and discussion of teaching aids in anesthesia. During the afternoon, Dr. Leroy S. Chapnick, Providence, will present "Use of Fructose Intravenously as a Possible Substitute for Dextrose"; Dr. Harold W. Williams, Providence, "Respiratory Arrest—Its Effect on the Central Nervous System"; and Dr. Meyer Saklad, Providence, "Pressure Breathing in Anesthesia and Resuscitation." Dr. Kenneth K. Keown, Philadelphia, will discuss "Hypothermia for Cardiac and Great Vessel Surgery" at the evening meeting (7:30-9 p. m.).

TEXAS

Lectures in Ophthalmology.—At its meeting Feb. 2 and 3 the Dallas Academy of Ophthalmology and Otolaryngology will have as honor guest Dr. Brittain F. Payne, New York, who will present "Extraction of Complicated Cataracts" on Tuesday at 2 p. m., and "Complications Following Intraocular Operations" at 7:30 p. m. On Wednesday, 2 p. m., he will discuss "Operations for Retinal Detachment" and at 7:30 p. m. "Plastic Operations on the Eyelids." Luncheons (1 p. m.) and dinners (6:30 p. m.) honoring Dr. Payne will be given at the Melrose Hotel on both days.

GENERAL

Western Society for Clinical Research.—The annual meeting of the Western Society for Clinical Research will be held Jan. 29-30 at the University of Oregon School of Medicine, Portland. Twenty-nine papers were scheduled to be read by title and 37 to be presented. The latter include the following single author reports:

Number and Distribution of Human Hemic Cells, Edwin E. Osgood, Portland, Ore.
Some Properties of an Antimitochondrial Gamma Globulin, H. S. Mason, Seattle.
Influence of Cortisone on the Efficacy of Antibiotic Therapy in Experimental Infections, Ernest Jawetz, San Francisco.

Trudeau Clinical Session.—A tri-state clinical conference is being sponsored by the Trudeau societies and the tuberculosis associations of Illinois, Indiana, and Missouri at Pere Marquette Lodge, Grafton, Ill., Feb. 27-28. The conference will review a number of cases from hospitals in the three states, including 25 admissions in mental institution tuberculosis hospitals in Illinois. A guest consultant from the Philadelphia area will present cases from Pennsylvania tuberculosis hospitals. Application to attend the conference, limited to 75 (25 members from each of the three states) should be made to the executive secretaries of the respective state tuberculosis associations by Feb. 1.

Interprofessional Conference in Washington.—On Feb. 4 the American Pharmaceutical Association will sponsor a conference in the lecture room of the National Academy of Sciences, 2101 Constitution Ave., N. W., Washington, D. C., to which representatives of the health professions and of all phases of pharmacy have been invited. The meeting has been called to (1) determine the adequacy of the Federal Food, Drug and Cosmetic Act and state laws governing the practice of pharmacy, with regard to the distribution of drugs under present day methods and facilities for supplying medical care to the public, which will be considered during the morning session, beginning at 11 o'clock, and (2) develop an interprofessional code of ethics based on modern methods and facilities for supplying medical care to the public. The latter discussion, beginning at 2 p. m., will be devoted to consideration of the need for interprofessional understanding and cooperation in the interests of the prevention and treatment of disease.

Allergy Meeting in Houston.—The American Academy of Allergy will hold its 10th annual meeting at the Shamrock Hotel, Houston, Texas, Feb. 1-3 under the presidency of Dr. Ben Z. Rappaport, Chicago. The Monday afternoon session will open with the discussion "The Development of Immunohematologic Concepts" by Dr. William Dameshek, Boston, which will be followed by the color film "Effects of Histamine and Epinephrine on the Small Pulmonary Blood Vessels of Living Rabbits: An Experimental Study" by Drs. Walter S. Burrage, John W. Irwin, and Mr. James I. Gallemore, Boston. Tuesday morning "Immunochemical Studies of House Dust Allergen" will be presented by invitation by Dan H. Campbell, Ph.D., Donald Z. Silver, Ph.D., and Dr. Wilton E. Vannier, Pasadena, Calif. Presentation of "Allergy in Our Time" by Dr. M. Murray Peshkin, New York, president, American College of Allergists, precedes the presidential luncheon at which Dr. Rappaport will deliver his address. Tuesday afternoon Dr. Frank J. Dixon, Pittsburgh, will discuss "The Dynamics of the Immune Response."

Society News.—At the annual meeting of the **Southern Psychiatric Association** in Biloxi, Miss., Dr. John D. Trawick Jr., Louisville, took office as president. Other officers include Dr. Joseph E. Barrett, Richmond, Va., president-elect, Dr. Titus H. Harris, Galveston, Texas, vice-president, Dr. Frank A. Donaldson, Jackson, Miss., second vice-president, and Dr. Joseph L. Knapp, Dallas, Texas, secretary-treasurer.——At the annual meeting of the **Central Neuropsychiatric Association** in Indianapolis in October, the following officers were elected: Dr. Mabel G. Masten, Madison, Wis., president; Dr. Benjamin Boshes, Chicago, president-elect; Dr. Francis J. Gerty, Chicago, vice-president; Dr. Hamilton Ford, Galveston, Texas, secretary-treasurer; and Dr. Lealdes M. Eaton, Rochester, Minn., counselor.——At the annual meeting of the **Association for Research in Nervous and Mental Disease** in New York, the following officers were elected: Dr. Rustin McIntosh, New York, president; Dr. Walter O. Klingman, Charlottesville, Va., first vice-president; Dr. William S. Langford, New York, second vice-president; Dr. Clarence C. Hare, New York, secretary-treasurer; and Dr. Rollo J. Masselink, New York, assistant secretary. The subject for the 1954 meeting will be "Psychiatry and Neurology of Childhood."——Among the presentations to be made at the annual convention of the **National Association for Somatoprosthetics and Rehabilitation**, Conrad Hilton and Congress hotels, Chicago, Feb. 4-7, will be "Rehabilitation Problems in Tumor Surgery of the Jaws" by Dr. Orion H. Stuteville, Evanston, Ill. Drs. Arthur E. Smith and Marsh Robinson, Los Angeles, will deliver surgical lectures with color motion pictures on ankylosis, bone reconstruction, implants, rhinophyma fracture reduction and immobilization, and cleft palate.

CANADA

Conference on Silicosis.—The McIntyre Research Foundation will hold its Sixth Conference on Silicosis, Feb. 1-3, at the King Edward Hotel, Toronto. Presentations by physicians will include:

Silicosis—Historical Sidelights and Reflections, Reginald E. L. Watson, Montreal.
Practical Aspects of Silicosis Control, Louis W. Spolyar, Indianapolis.
Aluminum Therapy in Australia and British Columbia, Wilmot D. Robson, White Rock, British Columbia.
Lung Function and X-Ray Studies Following Aluminum Therapy
  (A) Foundry Industry, Leslie H. Osmond, Pittsburgh.
  (B) Ceramic Tile Industry, Fred W. Kehr, Olean, N. Y.
Progress in Silicosis Control, Anthony J. Lanza, New York.
Preliminary Experience with Dr. Gough's Large Section Technique in the Study of Silicosis and Other Pulmonary Dust Conditions, Allan J. Blanchard, Toronto, and Andrew R. Riddell, Ontario.
Further Progress in the Development of Statistics on Silicosis in Ontario Mines, Alfred H. Sellers, Toronto.
The X-Ray Film in the Differential Diagnosis of Silicosis, Charles M. Waggoner, Columbia, Mo.
Industrial Exposures to Aluminum Dust, Paul G. Bovard, Tarentum, Pa.
Pneumoconiosis of Foundry Workers, Oscar A. Sander, Milwaukee.
Radiographic Classification of the Pneumoconiosis, Ian McCallum, Durham, England.

FOREIGN

Joint Meeting on Anesthesiology.—The second meeting of the German, Austrian, and Swiss societies of anesthesiologists will be held April 24-26 in the German Museum on the Isar-Isle, Munich. Papers to be presented include: "Anesthesia in Neurosurgery," "Clinical Judgement of the Depth of Anesthesia," "Function of the Lungs and Anesthesia," "Artificial Hibernation," and "Treatment of Barbiturate Poisoning."

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1954 Annual Meeting, San Francisco, June 21-25.

1954 Clinical Meeting, Miami, Florida, Nov. 30-Dec. 3.

1955 Annual Meeting, Atlantic City, N. J., June 6-10.

1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.

1956 Annual Meeting, Chicago, June 11-15.

Annual Congress on Industrial Health, Brown Hotel, Louisville, Ky., Feb. 24-25. Dr. Carl M. Peterson, 535 N. Dearborn St., Chicago 10, Secretary.

Annual Congress on Medical Education and Licensure, Palmer House, Chicago, Feb. 7-9. Dr. Edward L. Turner, 535 N. Dearborn St., Chicago 10, Secretary.

National Conference on Rural Health, Baker Hotel, Dallas, Texas, Mar. 4-6. Mrs. Arline Hibbard, 535 N. Dearborn St., Chicago 10, Secretary.

American Academy of Allergy, Shamrock Hotel, Houston, Texas, Feb. 1-3. Dr. Alan G. Cazort, 1425 West 7th St., Little Rock, Ark., Secretary.

American Academy of Forensic Sciences, Drake Hotel, Chicago, Feb. 25-27 Prof. Ralph F. Turner, Michigan State College Dept. of Police Administration, East Lansing, Mich., Secretary.

American Academy of General Practice, Cleveland, March 22-25. Mr. Mac F. Cahal, 406 West 34th St., Kansas City 2, Mo., Executive Secretary.

American Academy of Occupational Medicine, John Marshall Hotel, Richmond, Va., Feb. 11-12. Dr. Leonard J. Goldwater, 600 W. 168th St., New York 32, Secretary.

American College of Radiology, Drake Hotel, Chicago, Feb. 5. Mr. William C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

American Laryngological, Rhinological and Otological Society:

- Western Section, University of Oregon Medical School, Portland, Ore., Feb. 6. Dr. Guy L. Boyden, 1735 N Wheeler Ave., Portland 12, Ore., Chairman.

American Orthopsychiatric Association, Hotel Commodore, New York, March 11-13. Dr. Marion F. Langer, Room 210, 303 Lexington Ave., New York 16, Executive Secretary.

American Protestant Hospital Association, Palmer House, Chicago, Feb. 10-12. Mr. Albert G. Hahn, Protestant Deaconess.Hospital, Evansville, Ind., Executive Secretary.

American Psychosomatic Society, Jung Hotel, New Orleans, March 27-28. Dr. Theodore Lidz, 333 Cedar St., New Haven 11, Conn., Secretary.

American Radium Society, The Homestead, Hot Springs, Va., March 14-16. Dr. Robert E. Fricke, 102 Second Ave. S.W., Rochester, Minn., Secretary.

Central Surgical Association, Statler Hotel, Detroit, Feb. 18-20. Dr. Robert M. Zollinger, University Hospital, Columbus 10, Ohio, Secretary.

Chicago Medical Society Annual Clinical Conference, Palmer House, Chicago, March 2-5. Dr. Maurice M. Hoeltgen, 86 East Randolph St., Chicago, Secretary.

Conference of Teachers of Clinical Radiology, Walton Room, Drake Hotel, Chicago, Feb. 6. Dr. Aubrey O. Hampton, 20 North Wacker Drive, Chicago, Chairman.

Dallas Southern Clinical Society, Dallas, March 15-18. Dr. T. Haynes Harvill, 433 Medical Arts Bldg., Dallas 1, Texas, Secretary.

Eastern Surgical Society, Boston, March 26-27. Dr. J. William Hinton, 130 East 79th St., New York, Secretary.

Michigan Clinical Institute, Sheraton-Cadillac Hotel, Detroit, March 10-12. Dr. L. Fernald Foster, 606 Townsend St., Lansing 15, Mich., Secretary.

Mid-South Post Graduate Medical Assembly, Hotel Peabody, Memphis, Tenn., Feb. 9-12. Dr. Thurman Crawford, 869 Madison Ave., Memphis, Tenn., Secretary.

National Conference on Care of the Long-Term Patient, Edgewater Beach Hotel, Chicago, March 18-20. Dr. Dean W. Roberts, 615 N. Wolfe St., Baltimore 5, Director.

National Conference on Trichinosis, A. M. A. Headquarters, Chicago, March 1. Dr. S. E. Gould, Wayne County General Hospital, Eloise, Mich., Chairman.

National Society for the Prevention of Blindness, Jefferson Hotel, St. Louis, March 10-12. Dr. F. M. Foote, 1790 Broadway, New York 19, Executive Director.

Regional Meetings, American College of Physicians:

- Topeka, Kans., March 19. Dr. William C. Menninger, 3617 West 6th Ave., Topeka, Kansas, Governor.
- Richmond, Va., Feb. 25. Dr. Charles M. Caravati, 807 West Franklin St., Richmond 20, Va., Governor.
- Southern California, Riverside, Feb. 13-14. Mr. E. R. Loveland, 4200 Pine St., Philadelphia 4, Executive Secretary.

Sectional Meetings, American College of Surgeons:

- Charlotte, N. C., Hotel Charlotte, Feb. 1-3. Dr. Thomas D. Sparrow, 403 North Tryon St., Charlotte 2, N. C., Chairman.
- French Lick Springs, Indiana, French Lick Springs Hotel, March 15-17. Dr. Carl H. McCaskey, 20 N. Meridian St., Indianapolis 4, Chairman.
- Omaha, Neb., Hotel Fontenelle, March 1-4. Dr. Earl A. Connolly, 107 South 17th St., Omaha, Chairman.
- Reno, Nev., Riverside Hotel, Feb. 25-26. Dr. Kenneth F. Maclean, 120 N. Virginia St., Reno, Nev., Chairman.

Society of University Surgeons, Sheraton Hotel, Rochester, N. Y., Feb. 11-13. Dr. C. Rollins Hanlon, 1325 South Grand Blvd., St. Louis, Secretary.

Southeastern Allergy Association, Dinkler-Plaza Hotel, Atlanta, Ga., March 25-27. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia 1, S. C., Secretary.

Southeastern Surgical Congress, Tutwiler Hotel, Birmingham, Ala., March 8-11. Dr. Benjamin T. Beasley, 45 Edgewood Ave. S.E., Atlanta, Ga., Secretary.

Western Society of Electro-Encephalography, Del Monte Lodge, Pebble Beach, Calif., March 7-8. Dr. Sylvester N. Berens, 902 Boren Ave., Seattle, Secretary.

FOREIGN AND INTERNATIONAL

Association of Surgeons of Great Britain and Ireland, Leeds, England, May 13-15, 1954. Dr. Henry W. S. Wright, 45 Lincoln's Inn Fields, London W.C.2, England, Honorary Secretary.

British Medical Association, Glasgow, Scotland, July 1-9, 1954. Dr. A. Macrae, B.M.A. House, Tavistock Square, London, W.C.1, England, Secretary.

Canadian Medical Association, Vancouver, B. C., Canada, June 14-18, 1954. Dr. T. C. Routley, 244 St. George St., Toronto 5, Ont., Canada, General Secretary.

Conference of International Union Against Tuberculosis, Madrid, Spain, Sept. 26-Oct. 2, 1954. Secretariat, Escuela de Tisiologia, Ciudad Universitaria, Madrid, Spain.

Congress of International Association for the Prevention of Blindness, New York, N. Y., U. S. A., Sept. 12-17, 1954. Professor Franceschetti, 2 Avenue Mirmot, Geneva, Switzerland, Secretary-General.

European Society of Cardiovascular Surgery, Edinburgh, Scotland, July 9-10, 1954. For information address: Mr. A. J. Slessor, Department of Surgery, University New Building, Edinburgh 8, Scotland.

Health Congress of the Royal Sanitary Institute, Scarborough, England, April 27-30, 1954. Mr. P. Arthur Wells, Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W.1, England, Secretary.

International Anesthesia Research Society, Los Angeles, Calif., U. S. A., Oct. 4-7, 1954. For information write: Dr. T. H. Seldon, 102-110 Second Avenue S.W., Rochester, Minn., U. S. A.

International Cancer Congress, Sao Paulo, Brazil, July 23-29, 1954. Prof. A. Prudente, 171 rua Benjamin Constante, Sao Paulo, Brazil, President.

International Conference on Thrombosis and Embolism, Basle, Switzerland, July 20-24, 1954. Dr. W. Merz, Chief Medical Officer, Gynecological Clinic, University of Basle, Basle, Switzerland, Hon. Secretary.

International Congress of Clinical Pathology, Washington, D. C., U. S. A., Sept. 6-10, 1954. Dr. Robert A. Moore, Washington University School of Medicine, St. Louis 10, Mo., U. S. A., Chairman, Committee on Arrangements.

International Congress on Diseases of the Chest, Barcelona, Spain, Oct. 4-8, 1954 Mr. Murray Kornfeld, 112 East Chestnut St., Chicago 11, Ill., U. S. A., Executive Secretary.

International Congress on Group Psychotherapy, Toronto, Ont., Canada, Aug. 12-14, 1954. Dr. J. L. Moreno, Room 327, 101 Park Ave., New York 17, N. Y., U. S. A., Director of Organizing Committee.

International Congress on Gynecology and Obstetrics, Geneva, Switzerland, July 26-31, 1954. Dr. H. de Watteville, Maternité Hôpital Cantonal, Geneva, Switzerland, President.

International Congress of Hematology, Paris, Sept. 6-11, 1954. Dr. Jean Bernard, 86 rue d'Assas, Paris 6^{e}, France, Secretary.

International Congress of the History of Medicine, Rome and Salerno, Italy, Sept. 13-20, 1954. For information write: Segreteria XIV Congresso Internazionale di Storia della Medicina, Instituto di Storia della Medicine, Citta Universitaria, Rome, Italy.

International Congress of Hydroclimatism and Thalassotherapy, Dubrovnik, Yugoslavia, May 8-16, 1954. Prof. C. Plavsic, Zeleni venac 1, Belgrade, Yugoslavia, Secretary General.

International Congress of Industrial Medicine, Naples, Italy, Sept. 13-19, 1954. Professor Scipione Caccuri, Director, Institute of Industrial Medicine Policlinico, Naples, Italy, Chairman, Organizing Committee.

International Congress of Internal Medicine, Stockholm, Sweden, Sept. 15-18, 1954. Professor Anders Kristenson, Karolinska Sjukhuset, Stockholm 60, Sweden, Secretary-General.

International Congress of International College of Surgeons, São Paulo, Brazil, April 26-May 2, 1954. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago. Illinois, U. S. A., Secretary-General.

International Congress on Mental Health, University of Toronto, Toronto, Ontario, Canada, Aug. 14-21, 1954. For information write: Executive Officer, International Congress on Mental Health, 111 St. George St., Toronto, Ontario, Canada.

International Congress of Military Medicine and Pharmacy, Buenos Aires, Argentine, April 21-28, 1954. Direcion General de Sanidad Militar, Pozos 2045, Buenos Aires, Argentine.

International Congress of Nutrition, Amsterdam, Netherlands, Sept. 14-18, 1954. For information write: Dr. M. van Eekelen, Centraal Instituut voor Voedingsonderzoek T.N.O., 61 Catharynesingel, Utrecht, Netherlands.

International Congress of Ophthalmology, University of Montreal and McGill University, Montreal, Canada, Sept. 9-11, 1954, and Waldorf-Astoria, New York, N. Y., U. S. A., Sept. 12-17, 1954. Dr. William L. Benedict, 100 First Avenue Building, Rochester, Minn., U. S. A., Secretary-General.

International Congress of Orthopedic Surgery and Traumatology, Berne, Switzerland, Aug. 30-Sept. 3, 1954. For information write: Professor M. Dubois, Isle-Hospital, Berne, Switzerland.

International Congress of Psychology, Montreal, Canada, June 7-12, 1954. For information write: Prof. H. S. Langfeld, International Union of Scientific Psychology, Eno Hall, Princeton University, Princeton, N. J., U. S. A.

International Congress for Psychotherapy, Zurich, Switzerland, July 21-24, 1954. Dr. H. K. Fierz, Theaterstrasse 12, Zurich 1, Switzerland, Secretary General.

International Congress of the Sociedad de Médicos Internos, Residentes y Becarios del Instituto Nacional de Cardiologia de Mexico, Acapulco, Mexico, April 21-24, 1954. For information address: Dr. Jorge Soberón Acevedo, Avenida, Cuauhtemoc No. 300, Mexico, D. F., Mexico.

International Gerontological Congress, London and Oxford, England, July 12-22, 1954. Prof. R. E. Tunbridge, General Infirmary, Department of Medicine, The University, Leeds, England, President.

International Institute on Child Psychiatry, Toronto, Canada, Aug. 13-14, 1954. Miss Helen Speyer, International Association for Child Psychiatry, 1790 Broadway, New York 19, N. Y., U. S. A., Executive Officer.

International Poliomyelitis Congress, Rome, Italy, Sept. 6-10, 1954. Mr. Stanley E. Henwood, 120 Broadway, New York 5, N. Y., U. S. A., Executive Secretary.

International Society of Angiology, North American Chapter, Hotel Mark Hopkins, San Francisco, Calif., U. S. A., June 19, 1954. Dr. Henry Haimovici, 105 East 90th St., New York, N. Y., U. S. A., Secretary.

International Society of Blood Transfusion, Paris, France, Sept. 12-19, 1954. For information write: Colonel Julliard, Société Internationale de Transfusion Sanguine, 53 Boulevard Diderot, Paris 12^e, France.

International Society for Cell Biology, Leiden, Netherlands, Sept. 2-9, 1954. Professor Peter J. Gaillard, University of Leiden, Leiden, Netherlands, Secretary.

International Society of Geographical Pathology, Washington, D. C., U. S. A., Sept. 6-10, 1954. Professor Fred C. Roulet, Hebelstrasse 24, Basle, Switzerland, Secretary-General.

Irish Medical Association, Killarney, Ireland. July 7-10, 1954. Dr. P. J. Delaney, 10, Fitzwilliam Place, Dublin, Ireland, Medical Secretary.

Journees Medicales, Paris, France, April 21-25, 1954. For information write: Secretariat of the Journees, 12, rue Pierre-Geofroix, Colombes (Seine) France.

Latin American Congress on Gynecology and Obstetrics, Sao Paulo, Brazil, July 10-15, 1954. Prof. Dr. Jairo Ramos, av. Brigaderio Luiz Antonio, 278-8° andar, Sao Paulo, Brazil, Chairman of Organizing Committee of Medical Congresses.

Latin American Congress of Otorhinolaryngology, Caracas, Venezuela, Feb. 21-25, 1954. Dr. Victorino Marquez Reveron, Centro, Medico, Caracas, Venezuela, Secretary-General.

Latin American Congress of Physical Medicine, Medellin, Columbia, South America, Feb. 15-20, 1954. Dr. Cassius Lopez de Victoria, 176 East 71st St., New York 21, N. Y., U. S. A., Executive Director.

Pan American Congress of Child Welfare and Pediatrics, Sao Paulo, Brazil, July 15-21, 1954. For information address: Dr. Jairo Ramos, Avenida Brigaderio Luiz Antonio 278-8° andar, Sao Paulo, Brazil.

Pan American Congress of Gastroenterology, Sao Paulo, Brazil, July 19-24, 1954. For information address: Dr. Jairo Ramos, Avenida Brigadeiro Luiz Antonio 278-8° andar, Sao Paulo, Brazil.

Pan American Congress of Ophthalmology (Interim), São Paulo, Brazil, June 17-21, 1954. Dr. Moacyr E. Alvaro, São Paulo, Brazil, President.

Pan American Congress of Otorhinolaryngology and Bronchoesophagology, Mexico, D.F., Mexico, Feb. 28-March 4, 1954. Dr. Maximo Garcia Castañeda, Humboldt 17, Mexico 1, D.F., Mexico, Secretary-General.

Pan American Congress of Veterinary Medicine, Sao Paulo, Brazil, April 3-10, 1954. Dr. Joao Soares Veiga, Rua Pires da Mota 159, Sao Paulo, Brazil, Chairman of Organizing Committee.

Pan-Pacific Surgical Congress, Honolulu, Hawaii, Oct. 7-18, 1954. Dr. F. J. Pinkerton, Suite 7, Young Bldg., Honolulu 13, Hawaii, Director General.

Sectional Meeting, American College of Surgeons, London, England, May 17-19, 1954. Dr. Michael L. Mason, 40 East Erie St., Chicago 11, Ill., U. S. A., Secretary.

South American Congress of Angiology, Sao Paulo, Brazil, July 1954. For information write: Dr. Rubens Carlos Mayall, Rua Senador Vergueiro 73, Rio de Janeiro, Brazil, S. A.

World Congress of Cardiology, Washington, D. C., and Bethesda, Md., U. S. A., Sept. 12-17, 1954. Dr. L. W. Gorham, 44 East 23d St., New York 10, N. Y., U. S. A., Secretary-General.

World Congress of International Society for the Welfare of Cripples, Scheveningen-The Hague, Netherlands, Sept. 13-17, 1954. Secretariat: Miss H. P. Post, Pieter Lastmarkade 37, Amsterdam Z, Netherlands.

World Federation of Occupational Therapists, Edinburgh, Scotland, August 17, 1954.

World Medical Association, Rome, Italy, Sept. 26-Oct. 2, 1954. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

EXAMINING BOARDS IN SPECIALTIES

American Board of Anesthesiology: *Written.* Various Centers, July 16. Final date for filing applications in Jan. 16. Sec., Dr. Curtiss B. Hickox, 80 Seymour St., Hartford 15.

American Board of Dermatology and Syphilology: *Written.* Various centers, Sept. 2. *Oral.* Ann Arbor, Oct. 15-18. To be eligible candidates must have completed thirty-six months of training by October 1. Final date for filing application is May 1. Exec. Sec., Miss Janet Newkirk, 66 East 66th St., New York 21.

American Board of Internal Medicine: *Oral.* Chicago, April 1-3 (candidates in the midwest). Los Angeles, June 15-17 (candidates west of the Rocky Mountains and west coast). The closing date for acceptance of applications for Chicago and Los Angeles is Feb. 1. New York, Sept. 22-24 (candidates on the east coast). The closing date for acceptance of applications will be April 1. *Written.* Oct. 18. Final date for acceptance of applications will be May 1. *Subspecialties. Cardiovascular Disease.* Chicago, April 1. *Gastroenterology.* Chicago, April 2-3. The closing date for acceptance of applications for the subspecialties will be Jan. 15. Exec. Sec.-Treas., Dr. William A. Werrell, One West Main St., Madison 3, Wis.

American Board of Neurological Surgery: *Oral.* Chicago, May or June. Final date for filing application is Jan. 15. Sec., Dr. Leonard T. Furlow, 600 S. Kingshighway, St. Louis 10.

American Board of Neurology and Psychiatry: *Psychiatry and Neurology.* Chicago, April 29-30. Final date for filing application is Feb. 1. Sec., Dr. David A. Boyd, Jr., 102-110 Second Ave., S.W., Rochester, Minn.

American Board of Obstetrics and Gynecology: Written examination (Part I) and review of case histories for all candidates will be held in various cities of the United States, Canada, and military centers outside the continental United States on Feb. 5. Case abstracts to be sent by the candidate to the Secretary are now due. *Part II.* Chicago, May 10-17. Final date for filing application is April 1. Sec., Dr. Robert L. Faulkner, 2105 Adelbert Road, Cleveland 6.

American Board of Ophthalmology: *Practical examinations, 1954.* San Francisco, June 25-29; New York City, Dec. 5-9. Final date for filing applications was July 1, 1953. *Written, 1955.* Various cities, Jan. 24-25. Final date for filing application is July 1, 1954. *Practical examinations, 1955.* Philadelphia, June 10-15; Chicago, Oct. 9-14. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

American Board of Otolaryngology: *Oral.* Boston, May 17-21. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

American Board of Pathology: San Francisco, June 17-19. Sec., Dr. William B. Wartman, 303 E. Chicago Ave., Chicago 11.

American Board of Pediatrics: *Oral.* Washington, D. C., Feb. 19-21; Des Moines, March 19-21; New York City, May 1-3; San Francisco, June 25-27; Chicago, Oct. 8-10 and New Haven, December.

American Board of Physical Medicine and Rehabilitation. *Oral and Written.* Washington, D. C., Sept. 5-6. Final date for filing applications is March 31. Sec., Dr. Earl C. Elkins, 30 N. Michigan Ave., Chicago.

American Board of Plastic Surgery: *Entire Examination.* Galveston, April 17-19. Final date for receipt of case reports was Jan. 1. Final date for receipt of case reports for the fall 1954 examination is June 1, 1954. Corres. Sec., Mrs. Estelle E. Hillerich, 4647 Pershing Ave., St. Louis 8.

American Board of Proctology: *Part I.* Kansas City, Philadelphia and San Francisco, May 8. Sec., Dr. Louis A. Buie, 102-110 Second Ave. S.W., Rochester, Minn.

American Board of Psychiatry and Neurology: New York, Dec. 13-14; New Orleans, Feb. 28-March 1, 1955; San Francisco, Mid-October, 1955; New York City, December, 1955. Sec., Dr. David A. Boyd, 102-110 Second Ave. S.W., Rochester, Minnesota.

American Board of Radiology: *Oral.* Spring 1954. Final date for filing application was Dec. 1. Sec., Dr. B. R. Kirklin, 102-110 Second Ave. S.W., Rochester, Minn.

American Board of Urology: *Oral-clinical and pathology.* Chicago, Feb. 17-20. Sec., Dr. Harry Culver, 30 Westwood Road, Minneapolis 16

Board of Thoracic Surgery: *Written.* Various centers throughout the country. Feb. 26. Final date for filing application is Jan. 1. Sec., Dr. Wm. M. Tuttle, 1151 Taylor Street, Detroit, Mich.

DEATHS

McCants, John Marion ⊕ Captain, U. S. Navy, retired, Needham, Mass.; born in Smiths Turnout, S. C., May 9, 1892; University of Virginia Department of Medicine, Charlottesville, 1917; member of the Arkansas Medical Society; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; certified by the National Board of Medical Examiners; commissioned a lieutenant, junior grade, Medical Corps, U. S. N., July 19, 1917; promoted to lieutenant in 1920, lieutenant commander in 1925, to commander in 1936, and to captain in 1941; veteran of World Wars I and II; served on the U. S. ships Mercy, Nitro, Sapelo, Relief, and Arkansas, as district medical officer of the 10th naval district and as commanding officer of Naval Mobile Base Hospital No. 2 at the naval hospitals at Norfolk, Va., Pearl Harbor, T. H., League Island, Pa., Portsmouth, N. H., Chelsea, Mass., Newport, R. I., Mare Island, Calif., and Great Lakes, Ill.; attached to the Navy's Bureau of Medicine and Surgery for a short period in 1944; placed on the retired list of officers of the Navy by reason of physical disability on Jan. 1, 1947; died Dec. 8, aged 61, of diabetes mellitus with cardiac failure.

McHenry, Junius Hardin ⊕ New York City; born in Owensboro, Ky., April 22, 1876; Rush Medical College, Chicago, 1900; later took graduate work in Berlin, Vienna, Paris, and London; instructor in surgery at Western Reserve University School of Medicine in Cleveland from 1905 to 1914; colonel, medical reserve corps since 1924; served during World War I and was awarded the Victory Medal (three stars); fellow of the American College of Surgeons; member of the New York Academy of Medicine, Anglo-American Medical Association of Berlin and Vienna, Academy of Political Science, Horticultural Society, Association of Military Surgeons of United States, Military Order of World War, New York Society of Military and Naval Officers of World War, and Phi Rho Sigma; associate neurologic surgeon, Polyclinic Hospital, 1915-1917; visiting neurological surgeon at the Reconstruction Hospital, 1920-1928, serving as vice-president of the medical board, 1926-1928; surgeon at the Brooklyn-Manhattan Transit Corporation (now New York City Transit System) since 1926; died in East Norwalk, Conn., Dec. 4, aged 77, of cerebral hemorrhage.

Johnson, Scott ⊕ New York City; born in New Haven, Conn., March 18, 1898; Washington University School of Medicine, St. Louis, 1924; certified by the National Board of Medical Examiners; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; instructor in medicine at Cornell University Medical College; medical director of the Knickerbocker Hospital; medical director, secretary of the medical board, and attending physician at the Lincoln Hospital; member of the medical board of the Doctors Hospital; attending physician, Manhattan State Hospital; assistant attending physician, New York Hospital; died Dec. 14, aged 55, of coronary thrombosis.

Curphey, Wilfred Conklin ⊕ Stockton, Calif.; born in Abilene, Kan., April 27, 1905; University of Kansas School of Medicine, Kansas City, Kan., 1930; specialist certified by the American Board of Surgery; fellow of the American College of Surgeons; served during World War II; affiliated with San Joaquin General Hospital in French Camp, and St. Joseph's and Dameron hospitals; owner of the Curphy Clinic; at one time surgeon and superintendent of the New Mexico State Hospital in Las Vegas; died in the Peter Bent Brigham Hospital, Boston, Nov. 21, aged 48, of coronary disease.

Lamoureux, Stanislas Albert ⊕ New Bedford, Mass.; born in 1877; Tufts College Medical School, Boston, 1910; formerly a pharmacist; member of the Rhode Island Medical Society; formerly member of the city board of health; served as physician to the Board of Overseers of the Poor (now the Department of Public Welfare); practiced in Pawtucket, R. I., where he was on the staff of the Memorial Hospital; served on the staff of the Notre Dame Hospital in Central Falls, R. I.; affiliated with St. Luke's Hospital in New Bedford; died Nov. 17, aged 76, of uremia and arteriosclerosis.

Walker, Michael Muckleroy ⊕ Rocksprings, Texas; born in Sweet Home, Texas, Sept. 20, 1883; St. Louis College of Physicians and Surgeons, 1908; for two terms president and secretary of the Wichita County Medical Society; served during World War I; for many years city and county physician of Wichita Falls and Wichita County; chairman of the board of directors of Wichita General Hospital, Wichita Falls, from its opening until 1925, when he helped to found the Walker-Hargrave Hospital of that city, now Bethania Hospital; died recently, aged 70, of pneumonia.

Chandler, Thomas Jefferson, Betsy Layne, Ky.; Hospital College of Medicine, Louisville, 1906; died Nov. 20, aged 74.

Coleman, William Orange, Assumption, Ill.; Kansas City (Mo.) Hahnemann Medical College, 1903; died in the Decatur and Macon County Hospital, Decatur, Ill., Dec. 5, aged 81, of coronary heart disease.

Collins, James Daniel ⊕ Detroit; Western University Faculty of Medicine, London, Ontario, Canada, 1910; on the staff of Grace Hospital; died Nov. 16, aged 66, of coronary occlusion.

Cottlow, Benjamin Augustus, Oregon, Ill.; the Hahnemann Medical College and Hospital, Chicago, 1892; died Dec. 15, aged 82, of heart disease.

Cummings, Robert Earl, Winter Park, Fla.; Loyola University School of Medicine, Chicago, 1924; specialist certified by the American Board of Pediatrics; fellow of the American Academy of Pediatrics; formerly on the faculty of his alma mater; affiliated with Little Company of Mary in Evergreen Park, Ill., and Mercy and St. Bernard's hospitals in Chicago; died Dec. 13, aged 55, of cerebral hemorrhage, hypertension, and generalized arteriosclerosis.

Cunningham, George Smith ⊕ McDonald, Pa.; University of Pennsylvania School of Medicine, Philadelphia, 1910; spent many years in the Philippines as a medical missionary; served during World War I; on the staff of the Canonsburg (Pa.) General Hospital; died Nov. 28, aged 70, of multiple myeloma and compression fracture of the vertebrae.

Edenfield, Jesse Ryerson Jr., ⊕ Graniteville, S. C.; Medical College of the State of South Carolina, Charleston, 1943; served during World War II; on the staff of the Aiken County Hospital in Aiken; died Nov. 24, aged 34.

Elder, Fred Orestes ⊕ Marblehead, Mass.; Jefferson Medical College of Philadelphia, 1905; died in the Mary A. Alley Emergency Hospital Nov. 30, aged 74, of cancer.

Gibbs, Allen Gilbert ⊕ Oklahoma City, Okla.; born in Lake Mary, Miss., Feb. 16, 1909; University of Oklahoma School of Medicine, Oklahoma City, 1932; one of the founders and president of the Oklahoma Academy of General Practice, of which he was the first secretary for four years; served one term as vice-president of the Oklahoma State Medical Association; during World War II, lieutenant colonel with Oklahoma's 21st Evacuation Hospital, with which he saw three years' service in the South Pacific theater; died Nov. 27, aged 44.

Hendry, Wayland Marion Jr., ⊕ Atlanta; born in Washington, Ga., Nov. 1, 1916; Medical College of Georgia, Augusta, 1943; interned at the Macon Hospital in Macon, Ga.; a resident at the Georgia Baptist Hospital; during World War II served for three years as a battalion surgeon with the 44th Infantry Division in Europe; member of the staffs of the Georgia Baptist and Crawford W. Long hospitals; died in the University Hospital Nov. 16, aged 37, of lymphatic leukemia.

⊕ Indicates Member of the American Medical Association.

Herr, John Trout ⊕ Landisville, Pa.; University of Maryland School of Medicine, Baltimore, 1910; past president of the Lancaster County Medical Society; served on the staffs of the Children's Hospital in Philadelphia and St. Joseph's Hospital in Lancaster; died Oct. 11, aged 67, of arteriosclerotic heart disease.

Lange, Anthony Henry ⊕ Detroit; University of Michigan Medical School, Ann Arbor, 1916; served during World War I; affiliated with Deaconess Hospital; for many years chairman of the Wayne County Insurance Commission; died in Miami Beach, Fla., Dec. 1, aged 61, of pulmonary edema.

Langworthy, Howard Tracy ⊕ West Edmeston, N. Y.; Columbia University College of Physicians and Surgeons, New York, 1911; specialist certified by the American Board of Urology; member of the American Urological Association; fellow of the American College of Surgeons; affiliated with Methodist and Cumberland hospitals in Brooklyn; died Nov. 30, aged 68, of coronary thrombosis.

Levenberg, Bernard, Cleveland; Medical College of Alabama, Mobile, 1896; died Nov. 2, aged 82, of arteriosclerosis.

Lively, Charles O., Ralston, Okla.; Kentucky School of Medicine, Louisville, 1892; died in Pawnee Nov. 24, aged 84.

Loewenthal, Richard ⊕ New York City; Georg August-Universität Medizinische Fakultät, Göttingen, Germany, 1920; died Nov. 25, aged 61, of coronary thrombosis.

Lucas, William B., ⊕ Mendon, Mo.; St. Louis Medical College, 1879; on the staff of St. Francis Hospital in Marceline, Mo., where he died Dec. 14, aged 97, of uremia.

Ludlum, Walter Denton ⊕ St. Albans, N. Y.; University of the City of New York Medical Department, New York, 1898; an Associate Fellow of the American Medical Association; member of the American Academy of Pediatrics; specialist certified by the American Board of Pediatrics; past president of the Kings County Medical Society; consultant in pediatrics, Methodist Hospital, where he died Dec. 10, aged 78, of acute myocardial infarction.

McAllister, Robert Lewis ⊕ Marysville, Kan.; Central Medical College of St. Joseph, Mo., 1898; county health officer; died in November, aged 80, of coronary occlusion.

MacDonell, George Nowlan ⊕ Miami, Fla.; Atlanta College of Physicians and Surgeons, 1905; veteran of the Spanish American War; past president of the Florida Public Health Association; formerly health officer; died in the Jacksonville Memorial Hospital Dec. 8, aged 80, of myocardial degeneration with decompensation.

McDougall, Bernard William, Detroit; Western University Faculty of Medicine, London, Ontario, Canada, 1920; affiliated with Providence Hospital; died in St. Mary's Hospital in London, Ontario, Canada, Dec. 4, aged 60, of carcinoma.

McFadden, Robert Norman, Bakersfield, Calif.; Creighton University School of Medicine, Omaha, 1945; served on the staff of the Kern General Hospital; died in the Hospital of the Good Samaritan in Los Angeles, Nov. 26, aged 33.

Mann, Horace J., ⊕ Brockport, N. Y.; University of Buffalo School of Medicine, 1888; affiliated with Lakeside Memorial Hospital; died Dec. 16, aged 87, of arteriosclerosis and nephritis.

Manthei, Wyllys Anton ⊕ Lake Linden, Mich.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1912; fellow of the American College of Surgeons; for many years member of the school board; past president of the Houghton-Baraga-Keweenaw County Medical Society and the Upper Peninsula Medical Society; affiliated with St. Joseph's Hospital in Hancock, Calumet Memorial Hospital in Laurium, and Calumet and Hecla Hospital in Calumet; died Dec. 4, aged 63, of heart failure.

Meanwell, Walter Ernest ⊕ Madison, Wis.; Baltimore Medical College, 1909; formerly basketball coach at the University of Wisconsin, where he was later athletic director; received his Ph.D. from the University of Wisconsin in 1915; died Dec. 3, aged 69, of coronary heart disease.

Moore, Rufus Dillard Jr., ⊕ Houston, Texas; University of Arkansas School of Medicine, Little Rock, 1935; served during World War II; died Nov. 30, aged 43.

Morey, Oris L., St. Louis; Physio-Medical College of Indiana, Indianapolis, 1894; for many years a medical missionary; died in the City Hospital Dec. 9, aged 83, of pneumonia.

Mowry, William P., Detroit; the Hahnemann Medical College and Hospital, Chicago, 1904; formerly postmaster in Bronson, Mich.; died in the Sinai Hospital Dec. 10, aged 70, of acute coronary occlusion.

Murray, Lotis Velmer, Pleasant Hill, Mo.; Northwestern University Medical School, Chicago, 1930; county coroner; died in St. Luke's Hospital, Kansas City, Mo., Nov. 23, aged 48, of cirrhosis of the liver.

Nezworski, Henry Thomas ⊕ Ironwood, Mich.; Marquette University School of Medicine, Milwaukee, 1934; past president of the Gogebic County Medical Society; affiliated with Grand View Hospital; died near Rockland Township Dec. 2, aged 44, of injuries received in an automobile accident.

Pound, John Charles ⊕ Baltimore; Baltimore Medical College, 1896; fellow of the American College of Surgeons; affiliated with Bon Secours and St. Agnes hospitals; consulting rhinolaryngologist, Allegany Hospital of the Sisters of Charity, Cumberland, Md.; died Nov. 27, aged 89, of arteriosclerotic cardiovascular disease.

Prowdley, William Paul, Cleveland; Michigan College of Medicine and Surgery, Detroit, 1899; died in the Fairview Park Hospital Oct. 25, aged 76, of coronary artery sclerosis.

Purks, Paul Edwin ⊕ Nashville, Tenn.; Emory University School of Medicine, Atlanta, Ga., 1922; member of the American Academy of General Practice; affiliated with Nashville General Hospital and Mid-State Baptist Hospital, where he died Dec. 2, aged 55, of acute bronchitis and emphysema.

Ridings, Alfred Lafayette ⊕ Washington, D. C.; University of Louisville (Ky.) Medical Department, 1910; past vice-president of the State Medical Association of Texas; fellow of the American College of Surgeons; past president of the Texas Railway and Traumatic Surgical Association; served during World War I; for many years practiced in Sherman, Texas, where he was on the staff of the Wilson N. Jones Hospital; died Dec. 16, aged 74, of congestive heart failure.

Riebel, John Alan II ⊕ Kingsville, Texas; Ohio State University College of Medicine, Columbus, 1934; served during World War II; died Sept. 12, aged 46.

Rose, William B., LaFollette, Tenn.; Louisville (Ky.) Medical College, 1885; died Nov. 15, aged 96.

Runyan, John Richard, Newport, Ark.; Missouri Medical College, St. Louis, 1897; formerly health officer of White County; died in Newport Hospital Nov. 27, aged 86, of arteriosclerosis.

Scott, J. Milton ⊕ Scio, Ohio; University of Pittsburgh School of Medicine, 1910; died Dec. 2, aged 72, of coronary heart disease.

Shanklin, Benjamin ⊕ St. Louis; Marion-Sims College of Medicine, St. Louis, 1892; fellow of the American College of Surgeons; affiliated with Incarnate Word Hospital and St. John's Hospital; died Dec. 3, aged 86, of coronary thrombosis.

Sieve, Benjamin Frank ⊕ Boston; Tufts College Medical School, Boston, 1928; served as instructor in medicine at his alma mater; member of the Endocrine Society; affiliated with Boston City and Beth Israel hospitals; died recently, aged 50.

Simkins, Daniel, Philadelphia; Jefferson Medical College of Philadelphia, 1906; died in the Einstein Medical Center Nov. 16, aged 73.

Sterbcow, Marx David ⊕ New Orleans; Louisiana State University Medical Center, New Orleans, 1934; died Dec. 22, aged 43.

Wallerstein, Lazar ⊕ New York City; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1921; on the staff of Sydenham Hospital; died Oct. 17, aged 63.

FOREIGN LETTERS

DENMARK

Treatment of Hyperthyroidism.—Hitherto no comprehensive statistical study has been undertaken in Denmark to ascertain the comparative value of the operative and medical treatment for hyperthyroidism. At a meeting of the Danish Society for Internal Medicine on Nov. 27, 1953, Dr. J. Piper and Dr. J. Rosen presented such a study. Their survey of seven Danish articles giving primary operative results concerned 2,849 patients with an operative mortality rate of 1.5%. Among these seven articles was one by Bertelsen and his associates whose operative mortality covering the period of 1940-1945 was only 0.7%. On the medical side were four articles dealing with 558 patients treated over a prolonged period with antithyroid preparations. In this material, the deaths resulting from the complications or side-effects of medical treatment gave a mortality rate of 0.4%. It would be an oversimplification of the problem to attempt to assess the comparative merits of the two treatments on the basis of these two rates. While in some cases the indications for one or the other of the two treatments are clear, there remains a third group, the largest, in which the choice must be free. It is essential to remember that, if medical treatment fails, operative treatment can be tried, whereas the latter is of a much more irrevocable character.

In *Ugeskrift for Laeger* for Dec. 3, 1953, in which the study by Drs. Piper and Rosen was published, an editorial points out that the choice of treatment can now be narrowed down to an operation or treatment with antithyroid preparations, because roentgenotherapy is reduced to an auxiliary role in specially difficult cases, and the indications for giving radioactive iodine are very limited. Ordinary iodine, on the other hand, may be useful in preparing a patient for operation and under other special conditions. Children and patients over 60 are poor subjects for operation, and repetition of an operation is to be discouraged for fear of tetany and damage to the nerve supply. The varying quality of the operative results in different hospitals shows the importance of concentrating candidates for thyroidectomy in special hospitals that provide every opportunity for the modern and highly technical operative treatment of hyperthyroidism.

Hydrocortisone by Intra-Articular Injection.—Two articles in *Ugeskrift for Laeger* for Nov. 26, 1953, give encouraging accounts of various forms of articular rheumatism treated by different cortisone preparations. At the Frederiksberg Hospital, Dr. Erik Henriksen and Dr. Leif Nyfos treated 14 persons with chronic polyarthritis and 11 with osteoarthrosis with intra-articular injections of 25 mg. of hydrocortisone. A few patients with periarthrosis humeri and gouty arthritis were treated in the same way. Excellent results were obtained in most patients, particularly those with chronic polyarthritis in whom the improvement was most constant and of one to four weeks' duration. The response of the arthroses was also good and of about the same duration. Patients in whom treatment with gold, x-rays, and physiotherapy gave disappointing results were elated by the promptness with which these injections gave relief. The action of the drug being local, none of the systemic side-effects of cortisone were observed in any of these patients. None of the injected joints became infected, and in no case was there any exacerbation of the disease. On the other hand, no permanently curative effect is claimed for this treatment. It remains to be seen whether repeated injections can ensure permanent improvement. Meanwhile, well-established methods of treatment should not be discarded in favor of these injections. The promptness with which they relieve pain increases the possibility of "movement-therapy" being instituted earlier than usual.

In the second article, Dr. Erik Andersson and Dr. Knud B. Petersen report on the use of hydrocortisone (Hydrocortone) in eight patients with arthrosis of the knees and two patients with arthrosis of the hips. The hydrocortisone (25 mg.) was injected into the joints with the patients under local procaine anesthesia and, in most cases, after a little intra-articular fluid had been aspirated. Marked improvement with a remission of symptoms lasting 7 to 21 days was effected in eight of these patients. Only two of them obtained no relief from pain. No patient had any disagreeable side-effects, and there should be little risk of infection of the joints injected, if conscientious attention is paid to the technique. As this report is only preliminary, its authors stress the need for further experience with injections repeated after longer or shorter intervals. Only then can opinions be expressed with regard to the duration of remissions.

Streptomycin or Dihydrostreptomycin?—At a meeting of the Danish Otolaryngological Society and in the medical press, the comparative merits of streptomycin and dihydrostreptomycin in the treatment of tuberculosis in general and tuberculous meningitis in particular have been widely discussed. Based on a report of 60 patients with meningitis, the staff of the Blegdam Hospital concluded that dihydrostreptomycin should be discarded in favor of streptomycin when treatment is to be prolonged. Although the latter may entail a risk of loss of vestibular function, it is less likely to interfere with acoustic function than dihydrostreptomycin. Loss of vestibular function, with hearing retained, is less serious than deafness combined with more or less interference with vestibular function. A report from the Odense City Hospital on 16 patients with tuberculous meningitis does not present so clear a case against dihydrostreptomycin, but it seems that, since the introduction of isoniazid, it is now possible to reduce the dosage of streptomycin and thus almost completely avoid complications due to it. From the tuberculosis department of the Aarhus City Hospital comes a report on 188 patients with pulmonary tuberculosis who were given streptomycin or dihydrostreptomycin or both. Protracted dihydrostreptomycin treatment, with or without *p*-aminosalicylic acid (PAS), entailed insignificant vestibular disturbances, but a risk of deafness in some was serious and presumably irreparable. Such deafness sometimes developed after the treatment was discontinued, hence the advice to give up dihydrostreptomycin and to return to streptomycin that, with the lower doses now favored, should cause no serious complications.

Other reports on the comparative merits of the two drugs, although not so emphatically condemnatory of dihydrostreptomycin, do not overlook its potential capacity for causing deafness. Drs. O. Metz and Kjaer state that in a series of 780 patients with pulmonary tuberculosis treated with dihydrostreptomycin, 20 complained of deafness that was, however, not serious enough to warrant the discontinuance of this drug. This agent should be withheld when hearing is already defective or if acute hearing is of special importance to the patient. In *Nordisk Medicin* for Oct. 22, 1953, there is a series of articles on the subject covering recent experiences in Sweden, Norway, and Denmark and showing that the benefits of the streptomycins in tuberculous meningitis are now being enhanced by a more cautious dosage and by combined treatment with *p*-aminosalicylic acid and isoniazid and, in Sweden, with penicillin. Individual idiosyncrasy is still a problem; for example, there is the observation that in one Danish patient only 28 gm. of dihydrostreptomycin led to slight deafness, whereas in another a total dose of 262 gm. had no such effect.

Health of Greenland.—A public health report on Greenland for 1951, the first of its kind to be published, is a result of the public health law of May 27, 1950. In 1951, the native population of the country was 22,866. Most of the population lived in western Greenland; there were only 1,534 inhabitants

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The items in these letters are contributed by regular correspondents in the various foreign countries.

in eastern Greenland and 367 in northern Greenland. The birth rate in 1951 was 42 per 1,000, and the death rate was 26 per 1,000—a rate triple that of Denmark. With the high birth rate, Greenland's population is growing faster than that of Denmark; on the other hand the stillbirth rate was 2.5 times higher and the infant death rate 4.5 times higher in Greenland than in Denmark. The causes of death in Greenland differ from those in Denmark. Among the 480 deaths in Greenland in 1951, there were 173 from tuberculosis. Bronchopneumonia accounted for 10% of the deaths, and another 10% were due to measles. In marked contrast to these figures are the deaths from heart disease and cancer each of which accounted for only 3% of the deaths. Concerning sickness rates, there were 800 new cases of gonorrhea in 1951. Much has been done to combat it, and during the winter months it becomes a comparatively rare disease, only to flare up again in the summer when traffic at sea is more lively. The measures now being taken against two of the most fatal diseases in Greenland, tuberculosis and measles, reflect conditions that in certain respects are peculiar to this country and that present rare opportunities for exploring the benefits of various new public health measures.

ITALY

Italian Society of Pathology.—The third international convention of the Italian Society of Pathology was held in Siena, March 26-28, 1953. Professor Cesaris-Demel, director of the University of Siena Institute of Pathologic Anatomy, was the chairman.

Professor Peyronel called attention to the need for a parallel approach in studies of plant and animal pathology. The two fields are separated, he said, more in appearance than in reality, because protoplasm gives them a common basis and distinguishes them from inorganic things. Their sources of energy are identical, and the chemical processes in general are closely parallel. Even the pronounced diversities, which sometimes seem to create an abyss between the two fields, are found, after a more accurate investigation, to be characterized by a similar cellular chemistry. Professor Peyronel discussed diseases due to avitaminosis in plants and human beings and concluded that investigation of the oligodynamic substances in comparative pathology is a promising field.

Professor Ciaranfi, director, University of Perugia Institute of General Pathology, discussed the pathogenesis and functional significance of the regressive processes of the cell. He concluded that histocytological data alone are no longer satisfactory and that a biochemical integration is necessary. The integration of morphology and chemistry opens a new road for the investigation of cellular reactivity. Professor Ciaranfi reviewed various regressive cellular processes including cloudy swelling, vacuolar degeneration, and steatosis. The alterations of the mitochondria that were constant in this cellular metamorphosis were important in the studies of cloudy swelling.

Professors Gullino and Mottura reported on the reactive manifestations of the lymphatic organs and especially of the lymph nodes. They reviewed the concept of reaction of the lymphoreticular connections and gave a general view of the morphology of the lymph nodes and the various modes of histiocytic, lymphocytic, and plasmocytic reactivity and the relationship of these to the formation of antibodies. They discussed the latest views on the lymphocytopoietic function, the participation of the lymph nodes in intermediate metabolism, their diffuse and nodular reactive hyperplasia, the hyperplasias of lymph nodes in experimental allergy, and the forms of lymphoreticular hyperplasia.

Professor Romano Severi reported on the pathogenesis of gastroduodenal ulcers. He showed motion pictures of the work he and his associates, Professors Bonomi and Ferro, were doing to investigate the possible microbic pathogenesis of gastroduodenal ulcers. His report was based on the results they obtained and the analogy between these ulcers and those of the skin, mouth, and colon in which streptococci, and especially Streptococcus viridans, play an important role. Their studies showed the same type of streptococci in the stomach and duodenum as in the mouth. The presence of these organisms in and about the ulcers of the stomach and duodenum was proved with a "histomicrobic" demonstration. The germs attack mainly the free margins of the covering epithelium and are always found adhering to heterotopic cells of the gastric type in the duodenum. This relationship of continuity precedes the ulcerous phase. The infiltrated mucosa often shows neutrophilic granulocytes and evident degenerative phenomena of the epithelium to the point of a more or less deep erosion of the epithelium itself. An analogous phenomenon could also result from the action of the gastric juice or from other factors that exert their action on the epithelium that has been devitalized by the adhering germs. Professor Severi's theory rests on (1) a constant and peculiar gastroduodenal ulcer-producing power of streptococci, (2) a local implantation of the germs with erosion of the mucosa, and (3) a microbic infiltration of the mucosa before the ulceration occurs. The fact that the process becomes chronic may be ascribed to the prevailing microbic infiltration of the ulcerous margins that thus are unable to proliferate.

LONDON

Government Committee Report on Smog.—The government appointed a "committee on air pollution" in July, 1953, to "examine the nature, causes, and effects of air pollution and the efficacy of present preventive measures; to consider what further preventive measures are practicable; and to make recommendations." This committee has published an interim report (London, Her Majesty's Stationery Office) that defines smog as "a combination of natural fog and solid and gaseous polluting substances." It is estimated that over the country as a whole less than half the smoke is derived from domestic chimneys but in the London smog of 1952 up to 60% of the smoke was due to domestic fires. "It follows that a first, immediate and stubborn obstacle to the reduction of smoke is the preference of the majority of people for traditional methods of heating. The need for education and training in these matters is urgent and vital. . . . With few, if any, exceptions, no industrial chimney need emit more than a light haze of smoke if the combustion arrangements are adequate and are properly operated." Most (about 12 million) domestic space-heating grates are of old-fashioned design, made for the specific purpose of burning coal. Most smokeless fuels, other than low temperature coke, cannot be burned satisfactorily in them. "It is a major problem to replace the millions of these inadequate grates now in use by grates of suitable design." In addition, there is "nothing like enough smokeless fuel in the country for this purpose either now or in sight within the next few years."

The following recommendations are made for immediate action. Arrangements should be made for the Meteorological Office to issue warnings for areas of normally high pollution in which serious fog is expected to be present for at least 24 hours. Every effort should be made to provide adequate supplies of smokeless fuel to domestic consumers in London and other densely populated areas subject to bad fog and to encourage householders to lay in a supply so that they can use it during such periods. Smoke control measures in industry and offices should be brought up to peak efficiency at the beginning of the winter, and special efforts should be made to prevent heavy smoke emission during stoking. Householders are urged to use smokeless fuel, especially during periods of persistent fog. A mixture of coke and coal will burn reasonably well and will greatly reduce smoke. To reduce smoke, fires should not be banked at night and rubbish should not be burned. The general public is also requested not to bring automobiles into densely populated centers during a serious fog warning. Attention is drawn to the fact that less smog will find its way indoors, and rooms will be kept warmer, if drafts are prevented. If fog is very thick, elderly persons and those suffering from chronic chest and heart conditions are advised to remain indoors and to rest as much as possible. "Those who must go out will find that a closely fitting simple gauze mask, or a woollen scarf wrapped round the mouth and nose, will give some relief, by filtering out some at least of the solid contents of 'smog'."

Under normal conditions in any large town in winter the concentration of carbonaceous particles that constitute smoke at or near ground level may amount to 1 oz. per million cubic feet, and the concentration of sulfur dioxide may be 17 to 35 parts per 100 million volumes of air. In the London smog of December, 1952, the corresponding figures were 4½ oz. per million cubic feet and 134 parts per 100 million volumes of air. The inland consumption of solid fuel in Great Britain in 1952 was 204.7 million tons of coal, of which 53.1 million tons were carbonized to produce coke, tar, gas, motor spirit, fertilizers, and raw materials for chemicals. The remainder was burned directly. In addition, during 1952, 4.5 million tons of fuel and gas diesel oils and 0.6 million tons of creosote-pitch mixtures were burned; 2 million tons of oil were consumed by diesel engines, and 5.3 million tons of motor spirit were used in road transport. The estimated production of pollutants from all this in million tons is as follows:

Smoke	2.1
Grit	0.6
Sulfur dioxide	5.3
Other acids (nitric, hydrochloric)	0.3
Carbon monoxide	24.0

The London smog persisted for five days (Dec. 5 to 9, 1952). The number of deaths over and above those normally expected in the first three weeks of December indicated that about 4,000 persons died as a result of the smog. Deaths from bronchitis increased by about nine times during the week ending Dec. 13 and for pneumonia by nearly four times. This is a higher mortality than in any other London fog.

The amount of illness was also increased, as shown by the demands for hospital admission. The admissions for respiratory disease were nearly quadrupled and those for heart disease were trebled. The committee stated that they were "not in a position . . . to identify with any certainty the pollutants and the combination thereof which were responsible for the particularly harmful nature of the London 'smog' of December, 1952. There [was] however, a clear correlation between the pollution by smoke and sulphur dioxide, and the daily death rate in Greater London at that time." There was also a continuous abnormal death rate in Greater London during the two and one-half months following the smog. It is estimated that the economic loss by the nation as the result of air pollution is about 125 million pounds (350 million dollars) per annum.

"The problem of prevention is one of practicability and economics, and of the education of the whole community. Complete cure of both solid and gaseous pollution, if indeed it be ever attainable, is bound to take many years, but means of averting at least the worst evils of air pollution by smoke and grit are within . . . reach. It is simply a question of balancing the cost and inconvenience of enforcing a more efficient and scientific use of our fuels against all the advantages to be obtained in health, convenience, and economy from a clean atmosphere." Attention is drawn to the fact that, except for the "smokeless zone" provisions in local acts, the laws in force for the control of pollution of the air are aimed at pollution from industrial and not domestic sources. The preventive measures include: (1) conversion of bituminous coal into coke, gas, and electricity; (2) use of smokeless fuels for domestic purposes in place of bituminous coal; (3) replacement of old-fashioned domestic grates by improved appliances in which smokeless solid fuels, and if necessary bituminous coal, can be burned with appreciably greater efficiency; (4) extension, where economical, of central or district heating, whereby blocks or groups of buildings are heated from a single smokelessly fired boiler; (5) promotion of greater fuel efficiency in industry, both by more competent use of existing equipment and by the modernization of present equipment or the installation of new equipment where it is needed; (6) use of an efficient grit-arresting plant for furnaces fired by pulverized fuel or operated by forced draught; (7) cleaning of coal at the coal fields in order to remove shale and some of the sulfur compounds; and (8) research and development work on practicable methods of removing sulfur dioxide from the flue gases of power stations and other large boiler plants.

Seventeen local authorities in Great Britain have obtained special powers for the purpose of preventing smog but only two (Coventry and Manchester) have put statutory smokeless zones into operation. "The principle of smokeless zones has naturally attracted much attention and is widely regarded as a simple and easy solution of the 'smog' problem. Its rapid extention in this country is, however, subject to practical limitations. To have any material effect the zones must be large; if they are small they will not in fact be 'smokeless' since they will receive smoke from surrounding areas. The prohibition of smoke in an area presupposes that all the fuel that is burnt, whether in industrial or domestic premises, can be burnt without smoke, that is to say that every building will be equipped with the right kinds of appliances and that sufficient smokeless fuels will be available. While supplies of the latter are limited, their allocation only to smokeless zones would be at the expense of other areas. This suggests that any extension of smokeless zones, if they are to have the best results, should be carefully planned according to the needs of different areas. A smokeless zone may be achieved with less difficulty in an area of new development, but in the case of existing property it is likely to entail extensive conversions of plant and equipment and a radical change in traditional methods of heating. The establishment of smokeless zones must, under present conditions, involve increased expenditure and restrictions on the use of fuels whether in regard to industrial or domestic fires."

Another Linear Accelerator.—A few weeks ago the first linear accelerator (with an 8-million-volt potential) to be built specially for medical purposes was installed at Hammersmith Hospital. Now St. Bartholomew's Hospital is to have a 15-million-volt linear accelerator, the most powerful apparatus of its kind in existence for radiotherapy. A similar machine is being built at Hanwell for physical research. The accelerator at St. Bartholomew's Hospital produces penetrating rays by the bombardment of platinium foil by electrons. The 15-million-volt potential developed (the potential of the cobalt bomb is only 1,300,000 volts) means increased penetrating power, and it is hoped that the apparatus will be of value in the treatment of deep-seated tumors. This latest installation will allow St. Bartholomew's Hospital to regain a position it has maintained for many years in this country in the field of high-voltage therapy. In 1937, it installed a million volt deep x-ray unit, at that time the largest of its kind in the world.

Radioactivity of Tobacco.—In a letter to *Lancet* (2:1259 [Dec. 12] 1953) Prof. F. W. Spiers and Prof. R. D. Passey, of the departments of medical physics and experimental pathology and cancer research in the University of Leeds reported that "such radioactivity as is present in cigarette tobacco remains in the ash, and that very little, if any, is transferred to the smoke." Their experiments suggest that the maximum dosage of radioactivity that could be delivered to the lungs would be of the order of 2 or 3 mr a week, or about the dosage that body tissues receive continually from their average potassium content, local gamma rays, and cosmic rays. When tumors have been shown to be due to radioactive materials lodged in the body, the dosages involved were at least 10,000 times greater than these levels.

College of General Practitioners.—Since its foundation in November, 1952, the College of General Practitioners has done notable work in undergraduate and postgraduate education for general practitioners and research in general practice. Its first annual report is published as a supplement to the December issue of the *Practitioner*. Its membership exceeds 2,500, and regional facilities have been set up throughout the country. A report has been published on undergraduate education, based on a survey of the present meager facilities in most of the medical schools, and a course of lectures on general practice for senior medical students and junior graduates has been organized. A research register has been established, and a research newsletter has been published. Plans are complete for an investigation into the value of antibiotics and sulfonamides in the prevention of the complications of measles, and an ambitious scheme for a nation-wide survey of morbidity in general practice is being planned in association with the General Register Office. An interesting project is an "epidemic observation scheme," which is being planned with the Public Health Laboratory Service to observe and, if possible, differentiate, the occurrence, pattern, and distribution throughout the country of minor illnesses of epidemic type, e. g., some of the pyrexias of unknown origin that are not receiving the attention they deserve. The first annual general meeting of the college was held in London on Nov. 14, and was attended by more than 400 members and associates from all over the United Kingdom and Eire. Dr. William Pickles was unanimously elected as first president.

MEXICO

Mexico's Trial with BCG.—Mexican experience with BCG given by mouth began in February, 1949, when BCG vaccination of newborn infants was used here for the first time. The results obtained up to this year are reported in the official Bulletin of the National Campaign Against Tuberculosis (May, 1953). The International Campaign Against Tuberculosis sponsored a short-term mass vaccination program that was carried out from July to October, 1950. The vaccine used was specially prepared by Mexico's BCG laboratories with a strain obtained from the Pasteur Institute in Paris. Before undertaking the mass vaccination program, a control study was made to test the strength of the Mexican-made vaccine, as compared with that prepared for the International Campaign Against Tuberculosis by laboratories in Copenhagen, to test the sensitivity of Mexican people to tuberculin, and to determine the amount of vaccine that should be given in a single dose. The control studies were carried on simultaneously in Mexico City and in Copenhagen. They proved the Mexican vaccine to have practically the same quality and potency as that made in Copenhagen.

In Mexico two techniques were used. 1. Newborn infants and children under one year of age were given three doses of 30 mg. (each) of BCG by mouth, on alternate days, during their first 10 days of life. 2. Children more than one year old were given 0.025 mg. of BCG diluted to 0.1 cc. intradermally near the site of insertion of the left deltoid muscle. Oral vaccination was used in children less than one year old, because experience has shown it to cause only minimal reactions. This has gained acceptance of the procedure specially in areas with a low cultural level. It is easily accomplished, and no elaborate equipment is needed. The experience in Rio de Janeiro reported by Arlindo de Assis was useful in determining the dosage to be used. Only normal full-term children were vaccinated. No tuberculin test was made on them prior to vaccination, and vaccination was made only with the parents' consent. A personal and familial record was made for every child and filed in the archives of the BCG institute.

The intradermal route was used in children more than one year old, because world-wide experience has shown that it stimulates a tuberculin-positive reaction in 98% of those so vaccinated, that antibodies are demonstrable up to seven years in 92% of cases, and that undesirable reactions are rare. The Mantoux test was made one month prior to vaccination in all children in this group.

Mothers were asked to bring their vaccinated children and other relatives in 1, 2, 6, 12, and 18 months after vaccination and whenever they became sick, at which time their weight, height, clinical status, and tuberculin reactions were recorded and a radiological examination was made. Other laboratory examinations were made as indicated. From Feb. 18, 1949, to June 1, 1950, about 29,940 newborn infants were given BCG by mouth. From April 1, 1949, to Oct. 30, 1950, about 15,340 children over one year of age and young men, were given BCG intradermally. From June to October, 1950, Mantoux tests were performed on 183,259 persons, 85,901 of whom were vaccinated with BCG, including those who were vaccinated during the control period prior to mass vaccination.

An index widely accepted to show the efficiency of the vaccine is the percentage of vaccinated persons in whom a positive tuberculin reaction develops after vaccination. Positive Mantoux reactions developed in 97% of those who were given the vaccine, either by mouth or intradermally. A 1+ reaction (5 to 10 mm.) was seen in 82%, and a 2+ reaction (11 to 20 mm.) in 18%. No vesicles, enlarged lymph nodes, or general reactions were observed after postvaccination tuberculin tests.

A comparative radiographic study was made of 440 persons more than one year of age vaccinated intradermally and of 2,313 others of the same age who were not vaccinated. Follow-up studies were made 2 to 18 months after vaccination. Pathological shadows were seen in 0.7% of the films of the first group and in 2.8% of those of the second group. On 1,489 infants given the vaccine by mouth and reexamined at the BCG clinic 2 to 18 months later, 21 had abnormal radiographic signs but no symptoms, and their height and weight were normal. Clinical and radiographic studies were made of 10 of them 6 to 12 months later, and no abnormal signs were found. It was the consensus that the shadows observed on the first examination corresponded to tracheobronchial lymph gland enlargements, which had no effect on the children's health. Van den Berg, Kostic-Yoksic (1949), and others believed that this hilar reaction is but one of the several lymph gland changes that take place after oral vaccination with BCG and that it is not a severe complication.

Two to 18 months after vaccination a complete medical examination was made at the BCG clinic of 1,906 infants, 1,439 of whom had been vaccinated by mouth when they were born and the rest of whom had not been vaccinated but were relatives of those vaccinated. No tuberculosis was found among those vaccinated, but it was found in 4.6% of those not vaccinated. Diseases other than tuberculosis had been present in 15.4% of the vaccinated children and in 34.8% of those not vaccinated. In the same clinic a medical examination was made of 866 children, 1 to 12 years of age; 449 had been vaccinated and 417 had not. No tuberculosis was found among those in the first group, but it was found in 4.5% of those in the second group. Of those in the first group 7.2% and of those in the second group 34.8% had had diseases other than tuberculosis. Medical examination of 1,658 persons over 12 years of age, 232 of whom had been vaccinated intradermally and 1,426 of whom had not been vaccinated but were relatives of those in the first group, were made. No tuberculosis was found among those in the first group, but it was found in 1.4% of those in the second group. In the first group 14.6% and in the second group 13.7% had had diseases other than tuberculosis. The weight curves for the first 18 months of life of 3,293 babies who had been vaccinated with BCG shortly after birth were found to be similar to those of normal children of same age who were not vaccinated. This indicated that vaccination by mouth with 90 mg. of BCG does not interfere with the normal physical development of infants.

Conference on Health Education.—On Sept. 18, 1953, at the Social Security Department auditorium, Dr. Ignacio Morones Prieto, Secretary of Public Health and Assistance, opened the Regional Conference on Hygienic Education. This meeting was prepared and sponsored by the World Health Organization. Representatives were present from most of the Central American and Caribbean countries. At the inaugural session Dr. Carlos Luis Gonzalez, chief of the division of public health of the Panamerican Sanitary Bureau, emphasized the interest of all the governments, which are members of that organization, in health education as an important part of general education. Dr. Manuel Pesqueira, Mexican Under Secretary of Public Health and Assistance, admitted that there are still Latin American populations with deplorable hygienic conditions that may be benefited by health education. Later Dr. Pesqueira described in detail the experience obtained in four Mexican rural centers for health education, localized in the states of Veracruz, Morelos, San Luis Potosí, and Coahuila, the first three in tropical or semitropical and the fourth in a temperate region. In those centers, the public is taught the prevention of endemic diseases and the necessity for various vaccinations. Knowledge of prenatal hygiene and child care is given to women. Farmers are taught how to apply DDT to their homes and to build sanitary wells. The Guatemalan delegation reported that in their country men and women are taught native Indian languages so that they can teach hygienic principles to native groups.

CORRESPONDENCE

NAVAL RESERVE UNIT

To the Editor:—I note with satisfaction in THE JOURNAL, Dec. 19, 1953, page 1466, the news of the organizing of Naval Reserve Surface Division (Medical) 9-240 in the Ninth Naval District. I am sure it will be a most useful training unit for medical reserve personnel. However, it is not, as stated in THE JOURNAL, ". . . the first time Navy medical reservists have been able to join a paid reserve unit with regularly scheduled drill periods and definite curriculums for its participants."

Naval Reserve Surface Division (Medical) 4-25 was first planned in December, 1949, and a full curriculum of instruction evolved. The division was commissioned on April 27, 1950, and has continued to function ever since. There are weekly drills in assigned quarters in the U. S. Naval Hospital, Philadelphia. In addition to routine class work, trainees are given the opportunity to supplement didactic instruction with practical demonstration in the hospital, including summer cruise of active duty in that institution. The staff includes medical officers, medical service corps officers, and nurse corps officers. The commanding officer, since the inception, has been Comdr. Henry F. Page (MC), U.S.N.R. Since its organization in 1950, the division has continued to provide rated enlisted medical personnel to the number of about 75; many of these men saw active duty during the Korean conflict. There is no doubt as to the priority of Naval Reserve Surface Division (4-25) in this field.

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To the Editor:—With reference to the article on "A New Type of Navy Reserve Unit," I would like to call to your attention Navy Reserve Unit 4-25 (Hosp.). This unit was activated under my command on April 27, 1950, and is still very much alive. It is located within the United States Naval Hospital of Philadelphia. It is staffed by reserve medical officers, reserve nurses, pharmacists, medical service corps officers, and station personnel. It furnishes an organized course of medical instruction with direct bedside teaching in the hospital wards. Twice a year an intensive two week course is available to hospital corps personnel throughout the Fourth Naval District. There are 48 scheduled drills per year for which the men receive the usual pay. The unit is flourishing but can still take interested and qualified enlisted men or women. It is an ideal springboard for young men interested in medicine. Contact can be made through Chief Dick at the Philadelphia Naval Hospital, phone HOward 5-4000, extension 3.

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MEDICATED TISSUE

To the Editor:—In recent weeks one manufacturer of paper nasal tissues has placed on the market tissues impregnated with alkyl dimethylbenzylammonium chloride ($C_8H_{17}C_{18}H_{37}$). Approximately six weeks ago, I was called to the home of a 47-year-old white woman whose chief complaints were hoarseness, a feeling of fulness in the nose and frontal sinuses, sore throat, and nasal discharge. Her clinical symptoms resembled an upper respiratory type of infection. Her temperature was 98.6 F, and her eyes showed no redness or tearing. There was much nasal congestion with redness and nasal discharge. The dorsum of the tongue and the nasopharynx were slightly edematous and quite red. The chest was normal, with blood pressure 125/80 mm. Hg, pulse 88, and respirations 18. This patient was disturbed by a hacking cough. The striking comment made by the patient was the statement that she had a "funny taste" in her mouth for the past three days but denied the use of lozenges, nosedrops, or other drugs. She stated further that she had been perfectly well until she began to notice this queer taste.

I was at quite a loss to account for the clinical signs, in view of no elevation in temperature and pulse rate, and normal chest findings. While bending over reaching into my bag that was on the floor, I noticed two cartons of paper nasal tissues on the chair beside the patient's bed. The peculiar thing about these cartons that caught my eye was the difference in color and manufacture. When I asked my patient why she had two different brands of tissues, she offered the information that the "other brand" had some kind of medication or chemical in the tissues and that she had been using these instead of her usual brand for the past three or four days. I picked up one of the nonmedicated tissues, applied it to my tongue until moist, and tasted only the dry flat taste of the tissue. I did the same with the medicated tissue, and when this tissue was wet I could distinctly taste the acrid drug. The patient was told to discontinue the use of the medicated tissues immediately and was given antihistamines in tablet form. There was diminution of the symptoms in 24 hours and complete recovery in 72 hours.

After a period of two weeks, examination of the nose and throat was normal, so I asked my patient to begin using these drug-impregnated nasal tissues again. In 48 hours, the beginning of the symptoms as previously noted was quite evident. In 72 hours her allergic manifestations caused by the alkyl dimethylbenzylammonium chloride were full blown. As before antihistamine tablets were used with excellent results.

Since this reaction resembles a virus or influenza type of infection and since millions of persons in this country use nasal tissues instead of cotton handkerchiefs, physicians may expect a number of allergic reactions to the drug in these tissues.

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BARBITURATE INTOXICATION

To the Editor:—The Oct. 3, 1953, issue of THE JOURNAL carries an article by Dr. Lloyd H. Mousel entitled "Cerebral Edema and Its Relation to Barbituric Acid Poisoning." This article is timely in view of the continued controversy regarding the advisability of the use of analeptics in the treatment of barbiturate poisoning. It is not possible to enter an exhaustive discussion of the subject at this time, but it appears desirable to comment on the data that Dr. Mousel presents and the conclusions he draws from them. The thesis presented by Dr. Mousel consists of the assumption that, since cerebral hypoxia may result in cerebral edema, acute barbiturate poisoning will cause the same complications. In a properly managed case of acute barbiturate intoxication, however, a satisfactory oxygen supply to the central nervous system can usually be maintained. One of the main features of the pathological physiology of acute barbiturate coma is the inhibition of enzyme systems concerned with the metabolism of carbohydrates. Furthermore, in central nervous system depression associated with such enzyme inhibition, the requirement for oxygen by the cerebral cells is considerably reduced, and it is well recognized that barbiturates may protect cerebral cells against hypoxia by reducing their metabolic demands. Carl F. Schmidt (*Anesthesiology* 6:113, 1945) has even suggested that "In conditions in which cerebral anoxia is unavoidable, its effects may be in some measure ameliorated by the judicious use of narcotic drugs so as to lessen the demand of the brain for oxygen."

A publication by Fisher, Walker, and Plummer (*Am. J. Clin. Path.* 18:462, 1948) is used by Mousel to support his contention that in prolonged barbiturate anesthesia not the barbiturate as such, but the resulting brain edema is responsible for the depression. The fact is that Fisher and associates used therapeutic doses of barbiturates in dogs, and no determination of the barbiturate content of the brain was presented. It is known that, in cases of severe human barbiturate poisoning, large amounts of barbiturates can be found in the brain even if several days have passed since ingestion of the drug. There is good experimental evidence to show the antagonistic action of analeptics against barbiturates on the central nervous system, their primary site of action. It is also only fair to state that Fisher and associates never refer to cerebral edema.

We have no argument with the recommendation of the author that the administration of human serum albumin may help to reduce brain edema, providing it is present. We also are in complete agreement that symptomatic therapy, such as maintenance of an open airway, adequate oxygenation, and careful attention to fluid and mineral balance, is of utmost importance in the care of barbiturate poisoning. We cannot, however, accept the arguments advanced by Mousel against the use of pentylenetetrazol (Metrazol) or picrotoxin, in addition to the other treatment. Mousel refers to the prior publication by Mousel and Essex (*Anesthesiology* 2:272, 1941) in which those authors claim that analeptics like pentylenetetrazol and picrotoxin are not only useless but harmful in the treatment of acute thiopental overdosage. It was shown in 1945 by Pikrell and Richards that adequate doses of pentylenetetrazol arouse rabbits from anesthesia induced by thiopental (Pentothal) sodium and significantly shorten the recovery time of dogs; the latter action has been corroborated in the clinical part of this study. There is no thought in our minds, though, of substituting a drug for adequate artificial respiration in anesthesia accidents of this type. However, this paper by Mousel and Essex is hardly applicable to the conditions that are found after oral ingestion of large doses of the common type of barbiturate. Similarly we must object against the use of the observation by Schmidt that the oxygen consumption of the brain increases tremendously in the convulsive stage, as a direct support against the use of analeptics in acute barbituric poisoning. Competent and carefully supervised treatment with analeptic drugs avoids the occurrence of convulsions and consequently excessively increased cerebral oxygen needs, as well as the depression that follows the convulsive attack. Mousel refers to a paper published in 1952 by Reed, Driggs, and Foote and attributes to them the statement that they have observed ". . . several deaths among patients with cardiac arrhythmia who had received fairly large doses of picrotoxin, amphetamine and caffeine, or a combination of these drugs." As a matter of fact, Reed, Driggs, and Foote have not reported a single case of tachycardia fatality in which picrotoxin alone was used without either amphetamine or caffeine. In their conclusion, they stated clearly that "Caffeine and amphetamine may cause fatal arrhythmia when given in doses exceeding 6 gm. and 300 mg. per 24 hours, respectively." These authors only mention a case of coupling that was clearly due to picrotoxin, and, when administration of the drug was stopped, the arrhythmia ceased. In another case, premature ventricular contractions were seen after several doses of picrotoxin. These are the only two cases the authors mention in which picrotoxin was responsible for nonfatal cardiac irregularities. Pentylenetetrazol was not studied by the authors at all. Parenthetically it may be remarked that Mousel and Essex themselves state that pentylenetetrazol and picrotoxin in the doses employed by them produce no change in the electrocardiogram. We agree with Reed, Driggs, and Foote that amphetamine and caffeine type of compounds may lead to serious cardiac arrhythmias, but the results do not incriminate picrotoxin or pentylenetetrazol.

Mousel presents three cases of barbiturate poisoning in his paper. It is obvious from the review of case 1 that the patient could not have absorbed a large amount of the hypnotic since she reacted with twitching to small doses of picrotoxin. The second patient was given an unstated amount of pentylenetetrazol at home to which she reacted with coughing; no further analeptics were used and probably none were necessary. The third patient was certainly undertreated with picrotoxin, because the few milligrams that were given during the first day cannot be considered adequate by anybody who advocates the use of these analeptics for the treatment of severe barbiturate poisoning.

We know of no convincing evidence that edema of the brain is a major factor in the early stages of barbiturate poisoning where adequate treatment with analeptics is most promising. It occurs rather as a late complication. We also know of no evidence indicating that the use of large doses of analeptics, under carefully controlled conditions and with avoidance of overstimulation, increases the oxygen consumption of the brain beyond the supply available to the cells. We do not condemn the use of concentrated human albumin or other similar measures for the prevention or treatment of cerebral edema, but we do not feel that the quotations of papers as used by Mousel, or the data that he presents himself, supply sufficient evidence against the judicious use of analeptics in severe barbiturate poisoning.

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PAID BLOOD DONORS

To the Editor:—As Chairman of the Blood Bank Committee of the Medical Society of the County of Queens, New York City, it is my duty to study and keep informed as to the source of blood used for transfusion purposes in New York City. The most important person in blood banking is the blood donor. The care used in selecting him or her may mean the life or death of a patient. The classification of blood donors is not difficult; they are either good or bad donors, but most important is whether they are honest or dishonest. Infectious diseases like hepatitis and malaria can be detected only by a true medical history of the donor. No matter how much a blood donor is paid, if his only reason for donating his blood is money and if a true history of his past life interferes with his getting this money, he will lie.

There is not much difference in the basic set-up of blood banks. There is, however, a very great difference in the type of donors one sees in visiting blood banks. In hospital and community blood banks where blood is donated on a voluntary basis, the donors as a rule appear healthy and well nourished. In the paid donor type of blood bank that advertises in the public press to entice indigents and other poor unfortunate persons to sell their blood for a small sum of money, one often sees poorly nourished persons who appear to be suffering from some chronic disease or habit.

An article published in the *New York State Journal of Medicine* describing the conditions mentioned above and a copy of a New York City newspaper showing paid advertisements from eight blood banks for donors were presented to the House of Delegates of the New York State Medical Society in May, 1952. The following resolution was unanimously adopted by the delegates.

"*Resolved:*—That the Medical Society of the State of New York disapprove such paid advertisements for blood donors as it borders on the unethical practice of medicine."

There are two persons involved in every blood transfusion, the person who permits a pint of blood to be drawn from his veins and the person who receives this blood. It is the solemn duty of physicians performing this service to do all in their power not to injure either the donor or the recipient. As pointed out in medical literature, not the least of the evils is the too frequent taking of blood from poorly nourished and anemic blood donors, who often have to be hospitalized after giving blood. Advertising in the public press for blood donors is wrong, and this practice is unnecessary as shown by the success of community blood banks in various parts of our country. The supply of blood for civilian needs can be maintained on a voluntary and replacement basis. Friends, relatives, and neighbors will donate blood for those who need it.

One of the most outstanding evils of the paid donor type of blood banks is that they destroy the incentive of relatives, friends, and neighbors to donate their blood. Blood donors expecting to be paid and attracted by advertisements are more apt to be dishonest and undesirable. Some lay groups are beginning to take an interest in blood banking as shown by the following resolution adopted at the annual national convention of the Veterans of Foreign Wars. This convention met the week of Aug. 3, 1953, at Milwaukee, Wis. The following motion was unanimously passed. It stated ". . . that this convention go on record condemning the practice of the Veterans Administration of purchasing blood to be used in the Veterans Administration hospitals from the so-called Skid-Row Blood Banks and that the Red Cross or any other volunteer blood banks be the procurement agent to secure the blood required by our Veterans Administration Hospitals."

In this country today, we stand as the undisputed leaders of a world sorely in need of decent leadership. There is not much that we in the medical profession can do to assist that leadership in a political way. We can, however, assert leadership in a moral way. We can keep before us the A, B, C's of blood banking, and we can teach others the rudiments of our credo—"A is for America, B is for blood, and C is for charity." This is the formula that equates voluntary and replacement responsibility. It is at once a slogan and an expression of faith—faith that the American people will always donate blood on a charitable basis, given the prerequisite of honest information and unbiased indoctrination.

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AID FOR KOREAN PHYSICIANS

To the Editor:—At the recent clinical session of the American Medical Association, I had the privilege of reporting briefly to the House of Delegates a number of specific ways in which the physicians of the United States are assisting the physicians of Korea on the warm, friendly, "brother to brother" basis that befits the traditions both of medicine and of the free world. Some of the specific things that have been accomplished through the physicians of America working with the American-Korean Foundation are: 1. In response to the appeals published in THE JOURNAL, approximately 8,000 medical textbooks and reference books published since 1950 (with the exception of books on anatomy and histology) have been forwarded by physicians, local medical societies, medical schools, and other groups to the Alameda Medical Depot, 2155 Webster St., Alameda, Calif., (shipments should be marked KORMEDED) for shipment to American-Korean schools. 2. The American-Korean Foundation in August made grants totalling $59,000 to four Korean medical schools for general support and fellowships for establishing a tuberculosis control project and a Hansen's disease project. It gave grants to the National Institute for the Prevention of Disease and to support nursing education. 3. As a result of the cooperation of the Korean Ministry of Health, the Harvard School of Public Health, United States and United Nations medical personnel in Korea, and the American-Korean Foundation, a school of public health was started in Seoul in September. 4. The American-Korean Foundation has shipped to Korea over a million dollars in medical supplies and equipment donated by generous pharmaceutical and medical supply companies in the United States. 5. At the request of the World Medical Association, many American pharmaceutical manufacturers are sending sufficient copies of their scientific and clinical publications for distribution to all Korean medical students and to local medical societies.

These are only a few of the many ways in which the American medical profession has responded to the call to aid their Korean allies. After my brief presentation at the St. Louis meeting, a number of physicians asked me about ways in which they might give additional help. One very tangible way would be to follow the pattern that the National Education Association has developed in providing clothing packages for Korean physicians. Korean physicians prefer Western style suits, but the average height, weight, and build of a Korean physician is quite different from that of his American counterpart. Our used suits would not fit satisfactorily nor could they be successfully altered. Korean physicians are justifiably proud of their profession and their respected position in their communities. The provision of materials for new suits would be of great psychological and morale value to them. For $20, the American-Korean Foundation can make arrangements to ship to a Korean physician 6 yd. (5.5 m.) of new, 100% virgin wool cloth, 54 in. (1.4 m.) wide, in many patterns, colors, and weights, together with the cloth for lining, buttons, thread, and other findings. This is enough for at least two suits. Included in the package will be a letter in Hangul (the Korean language) explaining that this package of cloth is given to the physicians of Korea from the physicians of the United States. As proof of delivery, every Korean physician receiving a package of cloth will sign a receipt that will be returned to the American physician making the contribution. Should any physician in the United States desire to make contributions of $20 for the purpose of supplying a Korean physician with such a package, contributions may be sent to the American-Korean Foundation, 345 E. 46th St., New York 16.

Sincerely,
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CONSULTATION OR REFERRAL

To the Editor:—Recent articles on the ethics and economics of the practice of medicine have pointed up the need for the clarification of the terms referral and consultation. Many doctors of medicine fail to make a distinction between the two, so it is not surprising to find writers in newspapers and popular magazines doing the same.

Referral is generally understood as a transfer of the full responsibility of the patient to another physician who expresses willingness to accept the patient and the responsibility. The referring physician is then completely relieved of active management of the patient. There can be variations, such as referral for treatment of a certain condition while another illness is being cared for by the referring physician, but that is not usual. It is customary for the physician who accepts the patient to find out whether he is expected to send the patient back when his management is completed. Consultation is entirely different. A consultation implies cooperation. It can be for one visit or many, and the original physician is the responsible person, the responsibility being shared by others whom he selects.

When a physician is asked by another to see a patient, he usually knows whether it is for referral or consultation. One of the chief reasons that referrals and consultations have been confused is that we lack terms describing the recipient of a referral and the physician seeking consultation. In Webster, the person to whom a problem is referred is a referee; thus, a referring physician refers a patient to a referee. Consulter is the noun of to consult, to seek consultation; thus, a consulter shares his problem with a consultant. The words referee in one situation and consulter in the other sound odd, but they are unobjectionable, clear, and necessary.

When a specialist sends a patient to a colleague in another specialty, the patient usually is referred. If it is in his own specialty, he will ask for consultation and stay on the case. Internists, general practitioners, and pediatricians, because of their general knowledge and interest in the patient, usually prefer to follow closely any illness of their patients; therefore, they ask for consultation if added service is needed and they are capable of working closely with all of the other specialties. Today's general practitioner is generally well enough informed to be able to work on an equal basis with any consultant. The consultant should be happy to have a capable general physician as the manager of the patient. In those hospitals where general physicians are permitted to bring their patients for treatment and to request consultations as they need them, patients get along very well and are satisfied that the present system of medical care is quite acceptable.

A complete understanding of the terms consultation and referral is desirable. Even a recognition that there is a difference should improve some of the articles on ethics and economics that are currently appearing in widely read magazines.

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COUNCIL ON MEDICAL SERVICE

A. M. A. POLICY ON VETERANS' MEDICAL CARE

This is the second in a series of articles prepared by the Committee on Federal Medical Services of the Council on Medical Service to explain the American Medical Association position on medical care for veterans with non-service-connected disabilities and to provide background information on the subject. The first article appeared in THE JOURNAL, *Jan. 16, 1954, page 264.*

LOUIS M. ORR, M.D., *Chairman*
Committee on Federal Medical Services.

The Legislative Background

As pointed out in the first article of this series, the House of Delegates of the American Medical Association in June, 1953, urged the enactment of new legislation that would discontinue Veterans Administration hospital and medical care for patients with non-service-connected disabilities, except temporarily for war veterans with tuberculosis or neuropsychiatric disorders who are unable to pay for their own care and whose communities have inadequate facilities.

At the same time the House of Delegates expressed complete approval of the VA program of hospital and medical care for veterans who are ill or disabled as a result of their military service. The House adopted the findings of a Special Committee on Federal Medical Services, which said in its report at the December, 1952, Clinical Session: "The entire country is in complete agreement as to the rights of veterans with service-connected disabilities to receive free medical care and as to the medical obligations of their government to them."

The distinction between service-connected and non-service-connected disabilities, and the difference in A. M. A. policies regarding the two, should be kept in mind as the legislative background of the subject is examined, for a review of the history of veterans' medical care indicates that the United States Congress never intended the VA medical program to develop to its present Gargantuan proportions.

The original motive of the veterans' medical care program was the desire to provide care for veterans who had become disabled in the course of service to their country. However, through congressional acts, administrative interpretations and the happenstance of events since World War I, the program has strayed far from that original purpose. It has expanded rapidly during recent years, primarily to provide care for veterans with disabilities that occur after their discharge from military service and have no relation to military duty. Major emphasis has shifted from the care of service-connected conditions to the care of non-service-connected conditions.

Contrary to some statements and claims, there is no historical precedent or American tradition justifying the current federal program. The first purely medical benefits for veterans were authorized by the Congress in 1917 in an amendment to the War Risk Insurance Act. The medical services and supplies provided by that legislation were limited to veterans with service-connected disabilities.

The Veterans' Bureau, superseded by the Veterans Administration in 1930, was created by an Act of Congress in 1921, and the following year that new agency took over a number of U. S. Public Health Service hospitals that had been caring for veteran patients.

The first authorization for care in any kind of non-service-connected cases came in 1923. It came then because a reduction in the service-connected patient load had made some beds available. As a result, the Congress on March 4, 1923, authorized hospital care for veterans of the Spanish-American War, the Philippine Insurrection and the Boxer Rebellion suffering from neuropsychiatric or tuberculous diseases, whether or not service-connected. While this legislation involved a comparatively small number of veterans, it nevertheless required the construction of additional hospital facilities.

The doors were opened much wider with the passage of the World War Veterans Act in 1924. This legislation restated the hospitalization provisions of the amended War Risk Insurance Act and also provided liberalized hospital privileges, whenever existing government facilities were available, to veterans of any war, military occupation or expedition since 1897, not dishonorably discharged, without regard to the nature or origin of their disabilities.

The doors were swung open completely by the act of July 2, 1926, which eliminated the date 1897 and extended the benefits of the World War Veterans Act to the veterans of any war, military occupation, or expedition. This amendment qualified approximately 5 million veterans for lifetime medical care at public expense, caused a huge influx of veterans into government institutions, and further accelerated the construction of hospital facilities not needed for service-connected cases.

Seven years later Public Law 2, 73rd Congress, known as the Economy Act of 1933, repealed, among others, all previous public laws granting hospital or medical treatment or domiciliary care to veterans who served in or after the Spanish-American War. This law and its subsequent amendments provide the basic legislative authority for the current medical program of the Veterans Administration. The most important amendment, relative to non-service-connected disabilities, came in Public Law 141 of 1934, which provided:

"That any veteran of any war who was not dishonorably discharged, suffering from disability, disease or defect, who is in need of hospitalization or domiciliary care, and is unable to defray the necessary expenses therefor (including transportation to and from the Veterans Administration facility) shall be furnished necessary hospitalization or domiciliary care (including transportation) in any Veterans Administration facility, within the limitations existing in such facilities, irrespective of whether the disability, disease or defect was due to service. The statement under oath of the applicant on such form as may be prescribed by the Administrator of Veterans' Affairs shall be accepted as sufficient evidence of inability to defray necessary expenses."

Commenting on this legislation in 1947, General Omar N. Bradley, then Administrator of Veterans' Affairs, said in a letter to the Chairman of the House of Representatives Committee on Veterans' Affairs:

"It appears from the legislative history of Public Law 141, 73rd Congress, that the intention of Congress was not to reenact the liberal provisions of the World War Veterans' Act, but rather to limit hospitalization in non-service-connected cases to veterans unable to defray their own hospital expenses."

Another pertinent comment by an Administrator of Veterans' Affairs was made in 1944, when General Frank T. Hines pointed out:

"The right of war veterans to hospital treatment for non-service-connected disability was initially founded upon the theory that there would be a certain number of vacancies in hospitals acquired and maintained for care and treatment of those having a service-connected injury or disease, and such right has always been conditioned upon available facilities."

For the past 30 years, even in the period immediately after World War II, the VA hospitals have had more than enough beds for all service-connected cases. Nevertheless, and despite the legislative limitation concerning available facilities, the VA hospital system has been continually expanded. The net result, of course, has been to increase the amount of extra facilities available for non-service-connected cases. This, in effect, is a distortion of the real intent of the basic legislation.

Furthermore, in very recent years, several laws have been passed which establish presumptions of service-connection for over 30 diseases, providing they are 10% or more disabling within periods of from one to three years following separation from active duty. Even more significant is Public Law 791, 81st Congress, enacted in 1950, which provides that Spanish-American War veterans in need of outpatient treatment shall be considered as having service-connected disabilities for treatment purposes, regardless of the nature of such disabilities.

It is well to remember that when Public Law 141 was enacted in 1934, this nation had less than one-fourth of the 20 million veterans it has today. During the 1934 fiscal year less than 64,000 veterans were admitted to VA hospitals and homes. In the 1951 fiscal year almost 510,000 patients were admitted to VA hospitals. At the end of the 1936 fiscal year the VA had a total of 45,873 hospital beds. In 1952 the VA was operating 154 hospitals with almost 117,000 beds. In 1934 the VA medical program cost just over 37 million dollars, but the appropriation for the current fiscal year is over 747 million dollars.

The impact and implications of the 20-year-old basic legislation, in the light of present day conditions and the prospective future situation, call for a thorough reconsideration of national policy concerning VA hospital and medical care for veterans with non-service-connected disabilities.

MEDICAL MOTION PICTURES

NEW FILMS ADDED TO A. M. A. MOTION PICTURE LIBRARY

School Health in Action: 16 mm., color, sound, showing time 25 minutes. Produced in 1953 by Sam Orleans Associates for the Oklahoma State Department of Health with the cooperation of the Oklahoma State Department of Education, the Oklahoma State Medical Society, and the Oklahoma Advisory Health Council. Procurable on loan (service charge $2.00) from Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10.

This is a film that very cleverly shows how the school health council can play a role in bringing a school health program into being. An accident involving one of the children in front of the school brings the PTA to the realization of a "need." At the monthly PTA meeting, various parents speak out about their problems and demand that something be done. The teacher and principal follow suit by relating conditions at the school. Examples of how the school lacks a good health instruction program, a safe and sanitary environment, and health services are shown. In contrast, the school health council goes to work, and improvements are made immediately. Specific examples are given of how the problems are treated by the school health council. This is an excellent film for stimulating discussion in educational groups, service clubs, and medical audiences.

Oral Cancer: The Problem of Early Diagnosis: 16 mm., color, sound, showing time 32 minutes. Produced in 1953 by Audio Productions, New York, for the American Cancer Society, Inc., and National Cancer Institute, U. S. Department of Health, Education and Welfare. Procurable on loan (service charge $2.00) from Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10.

On the premise that discovery of oral cancer in an early stage is the equal responsibility of dentists and physicians, this film points out in an introductory statistical sequence that lesions of all sizes have a curability rate of 32% as against 57% for those of 2 cm. or less. Clinical material follows illustrating early lesions of the tongue, floor of the mouth, gingiva, cheek, palate, and lip. The technique of biopsy and the method of thorough oral examination are illustrated. Emphasis is on the fact that only by routine, thorough examination of the oral cavity and the nodes of the neck is it possible to discover cancer of the oral cavity in an early stage. As the title indicates, this well-organized teaching film deals with the problem of early diagnosis; the subject is covered very thoroughly. No mention is made of treatment. It is highly recommended for general practitioners and dentists. It should also be of value to interns, residents, and medical students. The photography is excellent, and the narration is especially well done.

Manual Rotation in the Management of Occiput Posterior and Occiput Transverse Positions: 16 mm., color, silent, showing time 32 minutes. Directed by H. J. Holloway, M.D., and E. S. Burge, M.D. Produced in 1943 by the Department of Visual Medical Education in cooperation with the Department of Obstetrics and Gynecology, Northwestern University. Procurable on loan (service charge $4.00) from Committee on Medical Motion Pictures, American Medical Association, 535 North Dearborn Street, Chicago 10.

Position diagnosis, manual rotation of occiput to an anterior position, forceps application, and extraction for each of the posterior and transverse positions are explained and illustrated first on a manikin, then by actual delivery. A complete review of this film was published in THE JOURNAL, July 19, 1947, page 1043.

MOTION PICTURE REVIEW

All My Babies: 16 mm., black and white, sound, showing time 54 minutes. Sponsored by the Georgia Department of Public Health. Produced in 1952 by the Medical Audio-Visual Institute of the Association of American Medical Colleges. Procurable on rental ($10.00) or on purchase ($150.00) from the Center for Mass Communication, 413 West 117th St., New York 27.

In Georgia, because of the present shortage of doctors and nurses, there are many areas where local midwives are still essential. The staffs of local health departments are responsible for the supervision and certification of the 1,322 local midwives who delivered 18,741 of the total of 95,161 live births in 1951. This film shows clearly and simply the methods a midwife should follow from the time she takes a case until the baby is taken to its first Well Baby clinic. The film was completely photographed in Georgia and features a certified local midwife, her patients, and the doctors and nurses who supervise the local midwife training program. "All My Babies" is an educational picture designed to improve existing services to mothers and children but not necessarily to approve or promote the particular type of care represented. This extremely well-organized picture is especially recommended for teaching midwives. It is also suitable for student nurses, public health nurses, medical social workers, and graduate nurses in obstetric departments. The photography and direction are outstanding.

BUSINESS PRACTICE

The following material is based on a public relations manual issued by the Public Relations Department of the American Medical Association.—ED.

COLLECTIONS

A physician pursues collections not merely for the money involved but because he wishes to retain his relationship as the patient's personal physician. Because an outstanding medical bill may deter a patient from returning for further treatment, medical collections must be handled differently from other collections, and the reasons for any delinquency in payment should be determined. Most patients are honest—probably less than 4% are financial "deadbeats" who have no intention of paying. There may be, however, 8 to 10% who are temporarily unable to pay and another 16% who may be living beyond their incomes. Recognizing these types is a problem, but faith in mankind and experience soon help the physician to separate the conscientious persons from the deadbeats. One physician says a person who lives beyond his income always expresses a desire to "spare no expense." When faced with questions about nonpayment, he says, "I'll pay it all in the future," whereas the average honest patient says, "I'll pay you a certain amount each month." The first step in making collections is to send carefully itemized statements at regular intervals. Some doctors who receive no payment after two or three statements begin marking subsequent bills with "Please" or "No payment has been received since ....date. We call this to your attention." Others believe that this approach is rather cold and formal and does not really aid in collections.

The ideal method of pursuing collections, in the opinion of many physicians, is the personal letter approach. A form letter that is recognized as such by the recipient is of dubious value. Letters should be friendly, requesting the patient to explain why payment has not been made. These letters should indicate that the doctor is sincerely interested in his story and merely wants to help him straighten out his financial obligations. The patient should be invited to stop in at the doctor's office to explain his reason for nonpayment, so that, if possible, special arrangements can be worked out. To give the patient an opportunity to save face, these letters, which should always be signed by the doctor himself, can suggest that the patient may have overlooked previous statements. On receipt of such a letter, most patients will make some effort to explain their delinquency. If a patient really is in financial straits, the doctor may be able to get public assistance help for him, or if the financial difficulty is temporary, the doctor and patient may be able to work out a satisfactory installment-plan type of payment program. Sometimes, even when friendly letters offering help have been sent, patients ignore their responsibilities. Some doctors send a second letter, expressing surprise that the first letter was ignored and firmly stating the person's responsibility to pay his indebtedness. When persons do not act in good faith, a firmer collection procedure can be followed.

When patients refuse to pay after receiving several statements and letters, some physicians write a short, firm letter stating that, under the circumstances, there is no course left but to turn the account over to a collection agency for further action. This should never be done, however, until a doctor is certain the bill cannot be collected in his office. It is recommended that no bill be submitted for collection until it has been on the physician's books for at least six months or the patient has refused to pay or declined responsibility. A physician will not necessarily lose the good will of the patient by suing for payment. A management official says that, strangely enough, when a doctor-client sued two patients for large sums, the patients lost the cases, paid up, and were back in the doctor's office for treatment very shortly. Most physicians believe, however, that it is unwise to resort to the courts to collect medical bills unless there are unusual circumstances.

When a physician loses his personal touch, becomes cynical, and charges all the traffic will bear, he is not a good doctor; on the other hand, if he follows the principles described here, he should be able to handle most collection problems with ease. It is important to get adequate information on the patient's first visit; to send itemized statements regularly; and to gage the patient's ability to pay as accurately as possible. When statements are ignored, a methodical follow-up should be started, and a friendly, interested letter asking why payment has not been made and offering assistance in planning partial payments should be sent. A balance between humanitarianism and business-like firmness should be maintained in pursuing medical collections, and the account should not be turned over to an outside agency for collection unless there is unmistakable evidence that it cannot be collected in any other way.

The following material is based on a public relations manual issued by the Public Relations Department of the American Medical Association.—Ed.

COLLECTION AGENCIES

A physician who sincerely has tried to collect his accounts and believes that he can do no more may wish to turn his accounts over to a collection agency. There are two reasons for judicious use of a collection service. First, it is only fair to conscientious patients who meet obligations promptly to try to collect from those who are negligent about paying, and, second, the physician should protect his financial interests. One of medicine's biggest public relations headaches is the agency that uses unscrupulous tactics such as lumping other accounts owed by the patient together for collection purposes or pursuing threat or scare techniques to recover on old bills. Repercussions from these methods may have a disastrous effect on a doctor's practice. An ethical agency, however, can do a real public relations job for physicians by ferreting out the patients who need special consideration and following through in collecting from persons who can pay. Because a different approach is necessary in pursuing medical collections, a physician should thoroughly acquaint himself with the collection methods used by a respective bureau before making use of its services. The main types of bureau are: 1. A bureau owned and operated as an integral part of a county medical society, e. g., Milwaukee County, Wisconsin. The manager of this kind of bureau is a society employee. There are not many of these in the United States. 2. A bureau operated separately from the medical society but partially controlled by the medical and dental profession, e. g., the Columbus Bureau of Medical Economics. This type of bureau is not necessarily controlled through the society but often through a separately formed board of directors composed of professional men. 3. A bureau privately owned and operated commercially for profit. This type of bureau is common throughout the United States.

Many private bureaus are willing to work out policies in regard to medical collections that are agreeable to physicians within the medical society. Representatives of the society should approach the owners of local bureaus serving its members and discuss the importance of employing sound public relations principles in collecting medical bills. Some agencies will be glad to appoint a liaison committee to work with society members in developing policy and a method for special handling of medical accounts. In an effort to encourage their members to patronize ethical bureaus, the Los Angeles County Medical Association has worked out an application for bureaus that wish society approval. Such an application could be worded as follows:

PROPOSED APPLICATION OF A MEDICAL COLLECTION BUREAU TO BECOME AN "APPROVED BUREAU" OF THE .... COUNTY MEDICAL ASSOCIATION

(To be filled out and signed by a limited number of substantial medical collectors—by invitation only)

> We recognize that a portion of the unfavorable publicity directed against the existing medical fee system is due to the occasionally tactless and irresponsible disregard of the real interests of the doctor by some collectors employed to collect delinquent medical accounts. We wish to conduct our bureau in a manner that will contribute to better medical public relations and to participate in that portion of the public relations program of the .... County Medical Association designed to improve unfavorable public attitudes toward medical accounts. We request that we be designated an "Approved Bureau" of the Association for the period Jan. 1, 1954, to Dec. 31, 1954.
>
> In return for our sincere cooperation, we understand that the members of the .... Association will be urged to refer their delinquent accounts requiring professional collection to us or to any other approved bureau, and we further understand that approval of our bureau may be withdrawn for cause at any time.
>
> If accepted as an approved bureau, we agree that we will handle such delinquent accounts as may be referred to us by the Association's members in accordance with the spirit as well as the letter of the following:

(Note: These standards are to apply to our relations with any member of the Association, and to the handling of their accounts received for collection.)

General.—We will not indicate to debtors or to the general public, on our letterhead or in any other way, that we are an approved bureau of the .... County Medical Association.

Disputes with Patients.—Bona fide disputes or objections to accounts will be referred to the doctor for final guidance.

Disputes with Clients.—In the event of a dispute between ourselves and a member of the Association, we agree that we will be bound by any decision of the Medical Economics Committee of the Association.

Fee Complaint and Professional Conduct Committees.—If the debtor shall file a complaint with the Fee Complaint or Professional Conduct committees of the Association, we agree, on request of the Committee, to postpone collection action at any stage of collection pending the decision or recommendations of the Committee and will comply with the recommendations of the Committee as to the disposition of the questioned account.

Adjustments in Fees.—We will notify the doctor of situations that may make reduction or outright cancellation of an account desirable, and we will be bound by the doctor's decision in such cases.

Malpractice.—We will be alert to threats of retaliatory malpractice action and will refer all express or implied threats to the doctor for instructions.

Budget Settlements.—We will offer to arrange budget payment plans for liquidation of accounts in accordance with the debtor's means before bringing strong collection pressure.

Legal Action.—We will avoid legal action except as a last resort. Such action will then be undertaken only with the express written consent of the doctor in each case. Prior to the filing of any action, search shall be made of the court dockets, superior and municipal courts, to ascertain whether or not the debtor already has an action for malpractice or breach of contract against the doctor on file.

Good Faith with Debtors.—We will keep faith with the debtor in all respects and will not take advantage of trivial violations of arranged budget terms as an excuse for demand for full payment. It is recognized, however, that some discretionary leeway is allowable in respect to known "dodgers," "skips," the bankrupt, etc.

Interest in Nonlegal Cases.—We agree to refrain from collecting interest, "carrying charges," or "collection fees" on nonlegal cases. (Interest may be collected where specifically provided for in a note or other written instrument, but such interest will be accounted for and remitted to the doctor less the proper commission charge.)

Interest in Legal Cases.—When interest is collected in legal cases, we agree to report and remit such interest to the doctor less the proper commission charge.

Forwarded Accounts.—In cases where it is necessary to forward an account to other localities, we will be certain that the forwardee selected will handle the account in an ethically acceptable manner.

"Pay Offs" To Business Managers.—We agree to refrain from entering into arrangements with accounts, auditors, business representatives, or other employees of the doctor under which we shall pay money to such representative in return for the placement of collection business. If such arrangements now exist, we agree to discontinue them.

Inspection of Records.—We agree that all collection and financial records in our office involving members of the .... County Medical Association will be available for inspection at any reasonable time by an authorized representative of the Medical Economics Committee of the .... County Medical Association for purposes related to matters contained in this application or specific collection cases.

State Collection Agency Law.—In collection matters not specifically covered in these standards of conduct, the rules and regulations established by the Secretary of State through the chief of the Division of Collection Agencies shall govern.

STATISTICAL AND FINANCIAL DATA

The following statistical and financial data are submitted for the confidential information of the Committee in judging our qualifications for approval with the intention that the Committee shall rely on its veracity:

1. Our business is licensed under the following name:
2. We have been a licensed collection agency in the County of .... for .... years.
3. The percentage of our total collection business with physicians, dentists, hospitals, laboratories, etc. (excluding business with chiropractors and veterinarians) is ......%.
4. Our assets amount to ....
5. Our liabilities amount to ....
6. Our net worth is ....

This application is dated at......................,
this .... day of .... 19.......

Name of Applicant....................
By...................
Title....................

Note: This financial statement must be notarized.

In brief then, to choose a collection agency wisely, select a local agency with a reputation for reliability and good standing in the community. Avoid out-of-state and mail order agencies. Investigate the methods used. Ask to see the type of first notice and follow-up material. Check up on the ownership and financial responsibility of the agency and its promptness in settling for money collected. Do not sign a contract—better agencies seldom use them. Make sure that no legal action or threat of it will be taken without your consent, that the agency will be governed by your instructions to collect only within the scope of good public relations, and that it will report cases deserving your special consideration and accept adjustment, withdrawal, or cancellation of an account when, in your opinion, such action is advisable in the interest of good public relations. Once an account has been turned over to an agency, the agency is entitled to a share of any sums paid by the patient either to you or to it. One should be fair and recognize the assistance given in collecting this amount. Be fair with your agency. *If these standards cannot be met by* any local agency, it is better not to use any collection service at all.

MEDICAL LITERATURE ABSTRACTS

UNITED STATES

American Journal of Clinical Pathology, Baltimore

23:1061-1186 (Nov.) 1953

SYMPOSIUM ON FLUID AND ELECTROLYTE BALANCE

Role of Pathologist in Management of Patients with Fluid and Electrolyte Disturbances. D. A. Nickerson.—p. 1061.
Role of Kidneys in Regulation of Fluid and Electrolyte Balance. J. H. Bland.—p. 1070.
Respiratory Factors in Disturbance of Acid-Base Balance. H. F. Weisberg.—p. 1082.
Fundamental Features of Metabolism of Sodium and Potassium. T. S. Danowski.—p. 1095.
Disturbances of Internal Environment and Their Correction. H. A. Schroeder and H. M. Perry Jr.—p. 1100.
Management of Water and Electrolyte Problems in Surgery. M. M. Musselman.—p. 1121.
Quantitative Requirements of Infant and Child for Water and Electrolyte Under Varying Conditions. W. M. Wallace.—p. 1133.
Theoretical and Practical Considerations in Correcting Fluid in Electrolyte Loses: A Résumé. W. S. Hoffman.—p. 1142.

American Journal of Ophthalmology, Chicago

36:1333-1496 (Oct.) 1953

Retrolental Fibroplasia and Related Ocular Diseases: Classification, Etiology, and Prophylaxis. T. S. Szewczyk.—p. 1336.
Angiomatosis Retinae (Von Hippel's Disease) 11 Years After Irradiation. F. C. Cordes and A. Schwartz.—p. 1362.
Epidemic Keratoconjunctivitis: Study of Small Epidemic. T. A. Cockburn, H. Nitowsky, T. Robison and F. S. Cheever.—p. 1367.
Surgical Correction of Spastic Senile Entropion: New Method. D. B. Kirby.—p. 1372.
Cataracts in Galactosemia. J. Johnson.—p. 1380.
Narrow-Angle Glaucoma: Effect of Miosis on Narrow-Angle Mechanism and Intraocular Pressure. O. Barkan.—p. 1387.
Contamination of Eye Medications: Practical Methods of Prevention. J. H. King Jr.—p. 1389.
Pigmentary Glaucoma and Its Relation to Krukenberg's Spindles. F. P. Calhoun Jr.—p. 1398.
Tapetoretinal Degeneration: Report of Four Cases of Rare Form of Luminescent Crystalline Tapetoretinal Degeneration: With Discussion of Its Cause. J. L. Pavía.—p. 1416.
Etiologic Considerations of Vertical Muscle Defects: I. General Considerations: Classification: Supranuclear Vertical Defects. W. H. Fink.—p. 1427.
Amblyopia in Adults: Treatment of Those Engaged in Various Industries. M. D. Kasser and J. B. Feldman.—p. 1443.

American Journal of Physical Medicine, Baltimore

32:261-330 (Oct.) 1953. **Partial Index**

Range of Hip Rotation and Torque of Hip Rotator Muscle Groups. E. T. Haley.—p. 261.
Permanent Total Blindness Associated with Severe Physical Disability Including Bilateral Amputation of Hands: Report of Case with Critical Evaluation of Rehabilitation Techniques. J. H. Kuitert and F. E. Vultee.—p. 276.
*Intelligence Levels in Cerebral Palsied Children. L. B. Hohman.—p. 282.

Intelligence Levels in Cerebral Palsied Children.—In a 20 year period of observation Hohman gained the impression that there was a high percentage of mental retardation in patients with cerebral palsy. Observing the patients who came to the North Carolina Cerebral Palsy Hospital for several years, he was struck by the rarity of good intelligence in these children. He feels that enthusiasts in the field of study and treatment of cerebral palsy have been loath to accept the fact that the chief hindrances to treatment was mental deficiency. They believed that the physical handicap masked the underlying good intelligence of these children. The author cites investigators in England who found that the intelligence quotient of only 23% of 354 children with cerebral palsy was in the average range. American investigators obtained about the same results in testing the intelligence of 330 children with cerebral palsy. Hohman too, in investigating the intelligence of patients at the Cerebral Palsy Hospital in North Carolina, found that at least 75% are below average, in contrast to 20% in the normal population, and that at least 50% are seriously retarded and mentally defective. He agrees with those who urge a reevaluation of the treatment and education program in the light of these facts. Furthermore, in the group with average intelligence, the handicaps are frequently so severe that it will be impossible to train these children so their intelligence can be put to any useful social or economic importance. He is in favor of teaching and training, bracing, surgical intervention, and the like to make the defective cerebral palsied child capable of self-care. He would want the same for the mental defective who does not have cerebral palsy. The problem of the severe mental defective can be solved only by placement in an institution. The efforts of highly trained personnel should be devoted to the small number of patients who have average intelligence, but even in this group a sizable portion will be excluded from profitable training by their severe disabilities.

Annals of Allergy, Minneapolis

11:555-688 (Sept.-Oct.) 1953

Reactions of Toxicity Incident to Antibiotic Therapy and Their Management. W. E. Herrell.—p. 555.
*Incidence of Allergy to Drugs in Pediatric Practice. M. Berkowitz, J. Glaser and D. E. Johnstone.—p. 561.
Bronchial Asthma, Secondary to Chronic Pulmonary Mycosis. P. J. Van der Werff.—p. 567.
Cleansing Agents—Irritating and Non-Irritating to the Skin. L. S. Nelson and A. V. Stoesser.—p. 572.
Diphenmethanil (Prantal) Methylsulfate: New Approach in Treatment of Poison Ivy Dermatitis. F. A. Parish.—p. 580.
Adenotonsillectomy and Its Relation to Asthma. G. Sobel.—p. 583.
Sensitivity to Grape and Grape Products Including Wine: Case Report. E. A. Brown.—p. 590.
Effect of Epinephrine Ointment on Scratched Human Skin. E. A. Ames.—p. 594.
Spirographic Studies of Asthmatics: Delayed Expiratory Sign. A. E. Bachmann, G. R. Moreno, M. A. Solari and M. C. A. De Lothringer.—p. 599.
Bacterial Allergy in Rheumatic Diseases. J. C. Small and J. C. Small Jr.—p. 609.
Unusual Toxic Reactions to Sulfonamide and Antibiotic Therapy: Review of Literature from 1936-1953. S. L. Lane, A. H. Kutscher and R. Segall.—p. 615.
Repeated Injections of Horse Serum in Rabbit (Historical Document). M. M. Arthus.—p. 633.

Allergy to Drugs in Pediatric Practice.—Questionnaires were prepared to record whether a child had ever been treated with a certain drug, and mothers were questioned concerning adverse reactions of the child to these drugs. Unless she was certain both that her child had been given a certain drug and that the child had reacted unfavorably to it, the particular drug was not checked off the questionnaire as having been given. In addition each mother was questioned as to the incidence of allergic disease in her child. Using these forms, drug histories were obtained on patients seen in the private practice of a pediatric allergist as well as in the general pediatric outpatient clinic of the Rochester General Hospital. This study included 500 infants and children ranging in age from 2 months to 15 years. Three hundred thirty-two (66.4%) of the 500 children had a history of allergic disease. The remaining 168 children (33.6%) had no history of allergic disease and were considered as nonallergic. With regard to penicillin, 10% of the allergic children had reactions, whereas no allergic reactions occurred in the nonallergic children. The incidence of allergic reactions to chlortetracycline (Aureomycin) was 3.7% in the allergic, and

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Titles marked with an asterisk (*) are abstracted.

no such reactions were observed in the nonallergic children. Oxytetracycline (Terramycin) caused allergic reaction in 3 of 88 allergic children and in none of 24 nonallergic children. Side reactions occurred in both groups, but in the allergic the percentage of such reactions was higher (10.2% compared with 8.3%). Sulfonamides also caused reactions in both groups, but here again the frequency was greater in the allergic than in the nonallergic (6.7 and 4.7%). Diphenhydramine (Benadryl) hydrochloride and tripelennamine (Pyribenzamine) were given mostly to allergic children and caused reactions only in these, not in the few nonallergic children. Acetylsalicylic acid (aspirin), the drug most commonly used in pediatric practice, was taken by 450 children of whom 306 were allergic. Allergic reactions to this drug developed in six (1.9%). No allergic reactions occurred in the 144 nonallergic children. Codeine was given to 231 children, of whom 191 were allergic. In three (1.5%) of the allergic children allergic reactions developed, urticaria in two and a generalized morbilliform rash in one. Side reactions, such as nausea, vomiting, restlessness, gastric distress, and excitement occurred in 7 (3.6%) of the allergic group; no reactions occurred in the 40 nonallergic children. Phenobarbital was taken by 260 of the children, of whom 183 were allergic. There were no allergic reactions to this drug. However, 24 (13.1%) showed side reactions. Only one nonallergic child had a side reaction. These studies revealed a higher incidence of drug reactions in allergic as compared with nonallergic children, 20% as compared with 2.4%, an eightfold difference. There are indications that side-effects represent in most instances minor allergic reactions.

Annals of Surgery, Philadelphia

138:489-680 (Oct.) 1953

*Cancer of Lung—An Analysis of 532 Consecutive Cases. J. H. Gibbon Jr., F. F. Allbritten Jr., J. Y. Templeton III and T. F. Nealon Jr. —p. 489.
*Capsular Operation for Parkinsonism: Attendant Functional Changes. J. Browder, H. A. Kaplan and A. M. Rabiner.—p. 502.
Extradural Hematomas of Posterior Fossa. E. Campbell, R. D. Whitfield and R. Greenwood.—p. 509.
Brain Abscess Associated with Pulmonary Angiomatous Malformation. W. E. Stern and H. C. Naffziger.—p. 521.
*Total Thoracic and Partial to Total Lumbar Sympathectomy, Splanchnicectomy and Celiac Ganglionectomy for Hypertension. K. S. Grimson, E. S. Orgain, B. Anderson and G. J. D'Angelo.—p. 532.
Neuro-Endocrine Response to Injury: Present Status of Problem. D. M. Hume.—p. 548.
Electro-Encephalogram in Evaluation of Effects of Anesthetic Agents and Carbon Dioxide Accumulation During Survey. G. H. A. Clowes Jr., H. E. Kretchmer, R. W. McBurney and F. A. Simeone.—p. 558.
Evaluation of Solutions for Fragmentation and Dissolution of Gallstones and Their Effect on Liver and Ductal Tissue. R. R. Best, J. A. Rasmussen and C. E. Wilson.—p. 570.
Splenoportography. D. R. Cooper, R. C. Brown, C. H. Stone III and L. K. Ferguson.—p. 582.
Potassium Movement in Acute Liver Damage. J. D. Stewart, W. H. Potter, R. S. Hubbard and M. N. Andersen.—p. 593.
Liver Regeneration Following Portacaval Transposition in Dogs. C. G. Child III, D. Barr, G. R. Holswade and C. S. Harrison.—p. 600.
Physiologic Studies in Cases of Stricture of Common Bile Duct: 28-Year Survey with Data on 254 Patients. W. Walters.—p. 609.
Postmortem Homografts as "Biological Dressings" for Extensive Burns and Denuded Areas: Immediate and Preserved Homografts as Life-Saving Procedures. J. B. Brown, M. P. Fryer, P. Randall and M. Lu.—p. 618.
Treatment of Carcinoma of Esophagus and Cardia by Resection and Postoperative Supervoltage Roentgen Rays. H. D. Adams, H. F. Hare, W. L. Davis and others.—p. 631.
Malignant Melanoma: Appraisal of Disease and Analysis of 105 Cases. H. W. Meyer and S. L. Gumport.—p. 643.
Carcinoma of Parathyroid Glands: 4 Cases Among 148 Patients with Hyperparathyroidism. O. Cope, G. L. Nardi and B. Castleman. —p. 661.
Surgical Management of Angiofibroma of Nasopharynx. A. J. Kremen. —p. 672.

Cancer of Lung.—Gibbon and associates report observations on 532 patients with proved cancer of the lung who were treated at the Jefferson Medical College Hospital between April 1, 1946, and Jan. 1, 1953. The histological diagnosis was based in 484 cases on examination of tissue and in the remaining 48 cases on the finding of cancer cells in the bronchial secretions. Cases in which histological evidence could not be obtained were not included in this study. Since life expectancy has not been greatly extended by any means other than surgical extirpation, the authors attempted radical extirpation of the cancer in all patients who did not have evidence of spread beyond the limits of the operative field. Exceptions to this in 22 instances were due to refusal to accept surgical treatment by 12 patients and the presence of other fatal systemic disease in 10 patients. In the remaining 130 of the 152 patients who were not operated on, there was evidence of metastasis outside of the involved hemithorax. The authors never undertook removal of part of the cancer for palliative treatment, but occasionally it was realized during operation that the cancer had spread to the point that complete removal was impossible. Only in these instances was neoplastic tissue knowingly left behind. The cancer was extirpated in 205 of 380 patients operated on. The whole lung with the regional lymphatic system was removed in 190 instances, lobectomy or bilobectomy was performed in 14 cases, and local excision of the cancer was done in one instance because of an error in diagnosis. Less than total removal of the lung was done only when there was: (1) extensive diminution of pulmonary reserve; (2) uncertainty of diagnosis when the lesion was small and peripherally located with no evidence of central extension; and (3) extensive invasion of the thoracic wall by the contiguous cancer. A lobectomy was done occasionally to identify histologically a suspected cancer. When confirmation was obtained, the remaining portion of the lung with the regional lymphatic system was extirpated. The operative mortality was 22%; the extent of involvement appears to be a significant factor in mortality. In cases in which the tumor extended beyond the lung, the mortality was twice that of the cases in which the mediastinal nodes or contiguous structures were not involved. The five year survival rate was 22% of the patients with the cancer removed and 9% of the entire series. Analysis of this and other reported series appears to indicate that the proportion of the total number of patients leaving the hospital alive with the cancer removed is directly related to the proportion of the total number of patients in whom extirpation of the cancer is attempted.

Capsular Operation for Parkinsonism.—Browder and co-workers point out that medicinal therapies have failed to influence the disabling symptoms of paralysis agitans (Parkinsonism), and surgeons have tried a variety of operations in an attempt to modify favorably the tremor and the rigidity. The authors briefly mention a number of these methods, giving particular attention to the work of Meyers, who was one of their associates when in 1939 he began to try several somewhat related surgical procedures, singly and in combination: undercutting of the premotor cortex, removal of the head of the caudate nucleus, partial section of the fibers of the anterior limb of the internal capsule, and interruption of the pallidofugal fibers. After Meyers entered the military service, Browder continued the search for an operation that would abolish tremor and rigidity without residual enduring paralysis. The capsular operation as now performed by these authors is described. It is a procedure that, when properly executed, abolishes the tremor and rigidity of unilateral paralysis agitans without residual paralysis. They emphasize that this procedure should be restricted to patients in the younger and middle age groups with symptoms and signs preponderantly unilateral. This exclusion of fully 90% of patients with this disease from the possible benefits of the operation indicates that further search should be made for a procedure applicable to a larger group of patients with paralysis agitans. Changes in neural functions observed during and subsequent to this operation are presented with the thought that an operation might be evolved that will be applicable to many of the persons now denied the benefits of surgical therapy. No functional changes accompanied or followed surgical exposure of a frontal lobe, transcortical approach to the anterior limits of a lateral ventricle, removal of the superior one-third of the head of the caudate nucleus, and division of the rostral three-fifths of the fibers passing through the anterior limb of an internal capsule, but since in no instance was the operation terminated at this point, the late effects of this amount of ablation and division of neural structures is unknown. Many patients who were subjected to the complete procedure seem happier, smile readily, but have little desire to return to a gainful occupation. There is an enduring "lobotomy-like" effect that may be attributed to a combination of frontal subcortical fiber pathway damage and the division of the fibers in the anterior limb of the internal capsule.

Sympathectomy for Hypertension.—Since it was demonstrated that splanchnicectomy did not significantly interrupt vasopressor pathways, total sympathectomy for hypertension was planned. Preliminary anatomic dissections demonstrated that a transthoracic approach through two incisions on each side best exposed the important stellate and splanchnic regions. The technique of total thoracic and partial to total lumbar sympathectomy and celiac ganglionectomy in the treatment of hypertension was reported in 1941. Denervation of the heart, other thoracic viscera and head, arms, and upper body with adequate protection against regeneration required removal of the stellate ganglions, along with the upper thoracic chain. Denervation of the splanchnic area was effected by removal of the lower thoracic chain, splanchnic nerves, and upper one or two lumbar ganglions with complete or partial celiac ganglionectomy. With most cell stations (chain, stellate, and celiac) largely removed, the cholinergic preganglionic fibers are less likely to achieve functional regeneration. The present report reviews observations on 172 patients subjected to total thoracic and partial to total thoracic and partial to total lumbar sympathectomy, splanchnicectomy, and celiac ganglionectomy during the last 13 years, the first operation of this type having been performed in June, 1940. A report on the first 113 of these patients appeared in 1949, and these are again considered in the present report. Reduction of blood pressure, with the patient lying down, to near normal values continues in one-third of the 140 patients now living. Survival rates, 84.5% at 5 years, 84.2% at 5 to 10 years, and 56.2% at 10 to 13 years have definitely surpassed those of reported follow-up studies of hypertensive patients not treated surgically and somewhat surpassed those of reported studies after splanchnicectomy.

Antibiotics & Chemotherapy, Washington, D. C.

5:957-1074 (Oct.) 1953. Partial Index

Rate of Bacterial Metabolism and Action of Streptomycin. E. D. Rosenblum and V. Bryson.—p. 957.
Cardicin, Antibiotic Having Antimicrobial and Antiviral Properties. R. A. Machlowitz, J. Charney, O. Gibson and others.—p. 966.
Beta-Diethylaminoethyl Ester of Benzyl Penicillin: II. Possible Transport Mechanism Involving Formed Elements of Blood. E. T. Parmelee, R. E. Rhodes and R. J. Ferlauto.—p. 971.
Effect of Streptomycin on Oxidative Assimilation of Escherichia Coli. A. E. Wasserman.—p. 977.
*Antibiotic and Antigenic Therapy of Brucellosis with Special Reference to Chronic Disease: Report of 421 Cases. H. J. Harris.—p. 982.
Influence of Carbomycin on Blood Coagulation. D. I. Macht and D. Kremen.—p. 990.
Antibiotics in Treatment of Salmonellosis: Evaluation Through Studies on Experimentally Infected Chicks. K. C. Milner and M. F. Shaffer. —p. 995.
Oxytetracycline Toxicity Studies in Dogs. J. Sedwitz, J. C. Bateman and C. T. Klopp.—p. 1015.
Stability Studies of Penicillin Products. F. H. Buckwalter and E. A. Walsh.—p. 1020.
Bacterial Susceptibility to Antibiotics: V. Relative Susceptibility of Staphylococci and Enterococci to Erythromycin, Carbomycin and Combination of Chlortetracycline, Oxytetracycline and Chloramphenicol. G. M. Eisenberg, H. F. Flippin and J. M. O'Loughlin.—p. 1026.
Some Laboratory and Clinical Experiences with Erythromycin. M. E. Grigsby, J. B. Johnson and G. W. Simmons.—p. 1029.

Antibiotic and Antigenic Therapy of Brucellosis.—A diagnosis of brucellosis was made in 421 of 759 patients studied between 1945 and 1951, because of suspected brucellosis. The remaining 338 patients were considered to have recovered from brucellosis or to have other illness. Among the 421 cases there were 15 acute cases, 28 chronic cases with acute exacerbation, and 378 chronic cases without a history of previous acute brucellosis. Diagnostic procedures included: (1) blood agglutination reaction (microscopic slide and standard tube techniques); (2) opsonocytophagic reaction; (3) blood complement fixation reaction; (4) culture of blood, bile, spinal fluid, urine, and feces and histological study of biopsy tissue whenever indicated, and (5) intradermal reaction. In acute febrile cases, antibiotics (streptomycin or dihydrostreptomycin parenterally and sulfadiazine orally or chlortetracycline, chloramphenicol, or oxytetracycline orally) were used routinely, singly or in various combinations. Brucella antigens were not employed in the acute phase but often were used if chronic illness followed. In chronic cases, especially those of questionable activity, treatment usually was initiated with brucella antigens. The antibiotics were employed and alternated or combined with brucella antigen whenever recovery was not complete. In active chronic brucellosis antibiotics were given orally, and brucella antigen added if necessary. The use of brucella antigens was predicated on the theory that the antibiotics may have a bacteriostatic effect only on circulating brucella organisms and little effect on those living intracellulary in the spleen, fallopian tubes, prostate, and lymph nodes. Streptomycin in combination with splenectomy or sulfadiazine produced cure in two acute cases. Of four patients with chronic brucellosis, two remained well after treatment with streptomycin plus sulfadiazine, whereas the other two experienced only temporary improvement with streptomycin. Dihydrostreptomycin was employed in 17 chronic cases with temporary improvement in 16 and failure in 1. Chlortetracycline proved effective in six acute cases. Of the 207 with chronic disease treated with chlortetracycline, 93 patients remained well; with brucella antigen given concomitantly or between courses of chlortetracycline, an additional 89 patients recovered. Little or no lasting benefits were obtained in the others because of ineradicable foci of infection or error in diagnosis. Of two patients with acute brucellosis treated with chloramphenicol, one remained well for 24 months; the other recovered after receiving oxytetracycline. Of 49 with chronic disease treated with chloramphenicol, 19 recovered after receiving this drug alone and 22 patients recovered after brucella antigen was added. Only temporary improvement occurred in five patients; one died of an unrelated illness; and three patients stopped treatment. Oxytetracycline was given to 5 patients with acute and 122 with chronic brucellosis. All with the acute form responded favorably. Of those with the chronic form, 58 responded to this drug alone and 51 recovered after brucella antigen was given in addition; only moderate improvement occurred in 7 patients. The authors feel that the high percentage of recoveries may be explained by repeated courses of antibiotic and/or brucella antigen, by the fact that patients were kept under observation for long periods so that retreatment was promptly initiated, and the less virulent abortus strains predominated. Oxytetracycline was better tolerated than chlortetracycline, and the tolerance to chloramphenicol was intermediate. Avitaminosis and moniliasis were self-limited in most patients.

Cancer Research, Chicago

13:689-752 (Oct.) 1953. Partial Index

Free Amino Acid Content and Transaminase Activity of Lymphatic Tissues and Lymphosarcomas. S. Kit and J. Awapara.—p. 694.
Combination Chemotherapy of Cancer: Potentiation of Carcinostatic Action of 8-Azaguanine by a Riboflavin Analog. L. S. Dietrich and D. M. Shapiro.—p. 699.
Lack of Effect of High Potency Arginase on Tumor Growth. D. M. Greenberg and E. N. Sassenrath.—p. 709.
Metabolism of DBA Mouse Ascites Thymoma. H. B. Levy, H. M. Davidson, R. W. Reinhart and A. L. Schade.—p. 716.
Studies on Ehrlich Ascites Tumor: II. Oxidation of Hexose Phosphates. H. G. Williams-Ashman.—p. 721.
Transplantation of Shope Papilloma and Rous Sarcoma During Early Developmental Stages. H. S. N. Greene.—p. 726.
Nucleic Acid Content of Cells of Bone Marrow Aspirated from Patients with Leukemia. M. L. Menten and M. Willms.—p. 733.
Enhanced Tumor Transplantability Following Second Transplantation in Mouse of Original Strain. A. E. Casey and J. G. Casey.—p. 737.
*Metastatic Frequency of Spontaneous Mammary Carcinoma in Mice Following Biopsy and Following Local Roentgen Irradiation. S. Kaae. —p. 744.

Metastatic Frequency Following Irradiation or Biopsy.—Kaae of the Radium Center of Copenhagen studied the incidence of metastases following biopsy and following roentgen irradiation of spontaneous mammary carcinoma in DBA mice, inbred through more than 40 generations. The incidence of spontaneous mammary carcinoma is very high in females of this strain. The mice were divided into three groups. Those in group 1 were examined by biopsy with a rotating trephine under local anesthesia, usually when the tumor had reached the size of 8 to 10 mm. The mice in group 2 received local roentgen irradiation, usually when the maximum diameter of the tumor was 8 to 10 mm. During the irradiation of the tumor the remainder of the body was carefully shielded with lead. The biopsy group included 132 mice, the irradiated group 135, and the control group 92. It was found that irradiation with 1,000 to 2,000 r considerably increased the incidence of pulmonary metastases, as compared to a control group (22.2% compared to 5.4%). This increased incidence of pulmonary metastases was due to only a small extent to a longer survival in this group, but primarily to a real increase in the metastatic tendency caused by the irradiation. Removal of biopsy specimens did not significantly increase the incidence of metastases (11.4% compared to 5.4% in the control group).

Endocrinology, Springfield, Ill.

53:345-464 (Oct.) 1953

Bio-Assay Method for Evaluation of Adrenocortical Potency by Means of Experimental Trauma, with Shock, in Rats. V. Schenker.—p. 345.
Plasma Protein-Bound Iodine After Intravenous Injection of Thyroxine in Thyroidectomized Dogs. L. W. O'Neal.—p. 358.
Demonstration of Storage and Release of Gonadotropin by Anterior Pituitary of Mouse During Gestation. A. J. Ladman and M. N. Runner.—p. 367.
Effect of Progesterone on Persistent Vaginal Estrus Produced by Hypothalamic Lesions in Rat. M. A. Greer.—p. 380.
Response of Pubic Symphysis of Mouse to Extracts of Pregnant Rabbit Serum and Pregnant Sow Ovaries and Its Application as Assay Method. B. Kliman, H. A. Salhanick and M. X. Zarrow.—p. 391.
Comparison of Response of Pubic Symphysis of Mouse and Guinea Pig to Extracts of Pregnant Sow Ovaries. B. Kliman, H. A. Salhanick, E. H. Frieden and F. L. Hisaw.—p. 403.
Influence of Adrenal Cortex and Cold Stress on Fasting Ketosis in Rat. J. L. Scott Jr. and F. L. Engel.—p. 410.
*Steroid Diabetes in Guinea Pigs: Effect of Cortisone Administration on Blood and Urinary Glucose, Nitrogen Excretion, Fat Deposition, and Islets of Langerhans. F. X. Hausberger and A. J. Ramsay.—p. 423.
Endocrine Influences on Renal Compensatory Hypertrophy. D. Rold and H. L. White.—p. 436.
Relation of Ascorbic Acid Nutrition to In Vitro Metabolism of Cortisone by Surviving Liver Tissue. H. Bacchus.—p. 441.
Liver Vitamin Content and Adrenal Cortical Function. F. G. Dhyse, G. R. Fisher, W. W. Tullner and R. Hertz.—p. 447.
*Effect of Thermal Burns on Thyroid Activity of Rat. A. W. Wase and E. Repplinger.—p. 451.

Steroid Diabetes in Guinea Pigs.—The 11-oxygenated corticosteroids and corticotropin are known to aggravate existing diabetes in humans and in rats, dogs, and cats. In normal rats, however, a steroid diabetes can be induced only by simultaneous force feeding. Hausberger and Ramsay report on cortisone diabetes in male guinea pigs with free access to food. The diabetes resembles in many respects Cushing's syndrome in man but differs from the steroid diabetes in force fed rats. The authors stress the following points: 1. Male guinea pigs receiving 2.5 mg. of cortisone acetate daily show after several days a partial degranulation of the beta cells and a considerable hypertrophy of the islets. 2. Ten to 50 mg. of cortisone daily produce in all animals an increased gain of body weight due to an augmented fat deposition, and glucosuria and hyperglycemia. The nitrogen balance is positive, or only slightly negative. The islets of the pancreas show an extraordinary hypertrophy. The number and size of beta cells is considerably increased, and loss of beta granulation takes place. If a severe diabetic condition is maintained for more than four weeks, a marked hydropic degeneration of many beta cells can be seen. After discontinuing the cortisone administration, the body weight decreases because of loss of fat, and the diabetes disappears slowly. The formerly enlarged and degranulated beta cells regain their normal size and appearance but the severely hydropic beta cells do not recover.

Effect of Thermal Burns on Thyroid Activity in Rats.—Decreased thyroid activity, measured as radioactive iodine (I^{131}) uptake, has been reported after the administration of various agents producing stress. Wase and Repplinger cite investigators who observed this in connection with the use of stress agents, such as vaccines, epinephrine, chemical agents, anoxia, abnormal nutritional states, corticotropin, and cortisone. Contradictory reports about the stress effect of burns on thyroid activity induced Wase and Repplinger to measure thyroid activity by means of uptake of radioactive iodine after deep thermal burns. The data obtained from these studies indicate that the stress of thermal assault depresses thyroid activity within four hours after burning. At this time burned rats took up 67% as much radioactive iodine as did the controls that were not burned. However, at 24 hours the burned animals took up 143% more iodine than controls; after 48 hours, 137%. There were indications that thermal burns initiate processes in the rat that effect thyroid I^{131} trapping activity by an initial depression followed by acceleration. This has been a general observation of the effects of many forms of stress.

Florida Medical Association Journal, Atlanta

40:293-362 (Nov.) 1953

Indications for Surgery in Treatment of Pulmonary Diseases. H. H. Seiler.—p. 307.
Cholesterol, Lipoproteins and Atherosclerosis: Present Concepts. D. Groom.—p. 315.
Adult Gaucher's Disease Complicated by Thrombocytopenia and Pregnancy. W. P. Logan.—p. 320.
Preliminary Survey and Analysis of 200 Consecutive Physical Examinations. G. W. Edwards II.—p. 323.
Retirement: When and When Not to Retire: Reflections of a Retired Physician. M. Golob.—p. 325.

Gastroenterology, Baltimore

25:113-320 (Oct.) 1953

SYMPOSIUM ON GASTRIC CARCINOMA

*Clinical Value of Gastrointestinal Cytologic Diagnosis. C. E. Rubin, B. W. Massey, J. B. Kirsner and others.—p. 119.
Familial Gastric Cancer. S. N. Maimon and M. M. Zinninger.—p. 139.

SYMPOSIUM ON GASTRIC AND DUODENAL ULCER

*Significance of Hormonal Factors in Pathogenesis of Peptic Ulcer. S. J. Gray, C. Ramsey, R. W. Reifenstein and J. A. Benson Jr. —p. 156.
Clinical Significance of Penetration and Confined Perforation in Peptic Ulcer Disease. W. S. Haubrich, J. L. A. Roth and H. L. Bockus. —p. 173.
*Multiple Gastric Ulcers: Their Occurrence in Benign and Malignant Lesions. J. A. Dolphin, L. A. Smith and J. M. Waugh.—p. 202.
Histological Changes in Gastric Mucosa During Digestion and Their Relationship to Mucosal Growth. R. Grant, M. I. Grossman and A. C. Ivy.—p. 218.
Studies on Bromsulfalein Excretion: II. Method for Simultaneous Performance of Bromsulfalein and Rose Bengal Excretion Tests. E. S. Cohen, J. E. Giansiracusa, L. A. Strait and others.—p. 232.
Id.: III. Simultaneous Performance of Bromsulfalein and Rose Bengal Excretion Tests in Individuals with Normal Hepatic Function. E. S. Cohen, J. E. Giansiracusa and T. L. Althausen.—p. 237.
Peritoneoscopy. G. J. Hegstrom, S. J. Zoeckler and P. G. Keil.—p. 243.
Relationship of Gastric Motility to Abdominal Pain in Hypothyroidism: Preliminary Report. J. A. Mendelson and G. M. Curtis.—p. 248.
Observations on Potential Differences of Human Stomach by New Electrode and Measuring System. P. W. Ingram and D. L. Richards. —p. 273.

Gastrointestinal Cytological Diagnosis.—In 300 patients whose gastrointestinal tract was examined by various cytological techniques during a two year period, the presence of benign or malignant disease was established by pathological examination or by clinical observation in 216 patients with lesions of the esophagus, stomach, pancreas, duodenum, and colon. These lesions were found initially in almost all the patients either by x-ray or by endoscopy. The authors were able with the aid of cytology to differentiate the benign from the malignant lesions in 196 patients (91%). Of the 196 patients, 93 had malignant lesions, and a correct cytological diagnosis was made in 76 (81%), while the remaining 17 carcinomas were not diagnosed by cytology. In 87 (94%) of the 93 patients the proved malignancies were diagnosed correctly by cytological methods combined with the initial x-ray examination. A correct cytological diagnosis was made in 120 (98%) of the 123 patients with benign lesions, while benign lesions were erroneously diagnosed as malignant in three, the only false positive diagnoses in the entire cytological series. All diagnostic methods combined, including x-ray, endoscopy, and clinical findings, yielded an accuracy of 100% in the group with benign lesions. The technical requirements for successful cytodiagnosis of the gastrointestinal tract are described in detail. New methods are presented including the antral abrasive balloon and chymotrypsin lavage for the cytological examination of the stomach and the magnetic positioned enema for the cytological examination of the colon. In the search for gastrointestinal malignancy, the history and physical examination may suggest the diagnosis. X-ray examination and endoscopy usually locate the lesion. The important contribution of the exfoliative cytological method is the more precise differentiation between benign and malignant lesions.

Hormonal Factors in Pathogenesis of Peptic Ulcer.—Gray and associates studied the effect of chronic stress situations on gastric acidity, gastric pepsin, and the excretion of uropepsin particularly in patients with vagotomy and antral resection (subtotal gastrectomy). The types of stress included (1) emotional (fear and anxiety), (2) physical stress (surgical procedures, pain, and trauma), and (3) the stress simulated by the administration of corticotropin or the adrenal corticoids. Epigastric pain during hormone stimulation and physical stress were evaluated in patients whose vagus nerve was intact as well as in those with successful vagotomies and gastric antral resections. Normal persons as well as patients with duodenal ulcer, gastric ulcer, and marginal ulcer were studied. The administration of corticotropin and cortisone over a period of days or weeks induced an increase in the basal and nocturnal gastric secretion of hydrochloric acid and pepsin approximating 200% with a similar concomitant increase in uropepsin excretion. Patients with epigastric distress during hormone therapy or with a peptic ulcer, reactivation of a previous ulcer, hemorrhage, or perforation demonstrated a coincident peak uropepsin excretion and an increased gastric acid and pepsin secretion in the ulcer range. Vagotomy, methantheline (Banthine) bromide, or atropine did not appear to alter the gastric acid, pepsin, and urinary uropepsin response to adrenal stimulation or stress. Removal of the gastric antrum did not alter the response of the stomach to corticotropin or stress. The uropepsin excretion in the urine appeared to be an accurate measurement of gastric pepsin secretion. Stimulation of the hypothalamus in dogs produced significant increases in uropepsin excretion. Patients with hypopituitarism and hypoadrenal function (Addison's disease) showed low uropepsin excretion. Patients with adrenal and pituitary hyperactivity excreted increased amounts of uropepsin. Although the gastric response to stress is undoubtedly mediated through the vagus nerve, there appears to be an additional hormonal mechanism that is intimately associated with the adrenal gland and the general adaptation syndrome. The authors' studies suggest that chronic emotional and physical stress stimulate the stomach to secrete increased acid and pepsin by way of a humoral mechanism involving the hypothalamic-pituitary-adrenal-gastric axis independent of the vagus nerve or the gastric antrum. There appear to be significant hormonal influences in addition to neural stimuli in the pathogenesis of peptic ulcer that may explain the mechanism by which ulcers may recur in patients whose vagus nerves have been satisfactorily severed.

Multiple Gastric Ulcers.—In 721 of the 1,552 cases of total and subtotal gastrectomy performed at the Mayo Clinic for lesions of the stomach between 1946 and 1950, the lesions were benign (ulcers), and in the remaining 831 cases the lesions were malignant. Specimens representing nonulcerative gastritis and gastric erosions were excluded. Multiple ulcers were found in 157 (21.9%) of the 721 patients with benign lesions, and in 37 (5.6%) of the 660 cases of ulcer among the 831 malignant specimens, the percentages being in a ratio of approximately 4:1.

J. Am. Geriatrics Society, Baltimore

1:671-744 (Oct.) 1953

Relation of Physiologic Aging to Physical Medicine. M. W. Thewlis. —p. 671.
The Aging Skin. R. R. Kierland and P. A. O'Leary.—p. 676.
Surgical Treatment of Non-Malignant Disease of Biliary Tract in Patients 65 Years of Age and Older. F. Glenn and D. M. Hays. —p. 684.
Diagnosis of Retroperitoneal Tumors. C. C. Guy and W. A. Wichowski. —p. 701.
Application of Plastic Surgical Principles to Treatment of Cancer. B. Cannon and J. E. Murray.—p. 715.
Some Problems Presented by Head Injuries in Older People. J. P. Evans. —p. 723.
Tumors of Ocular Structures in the Adult. B. F. Payne.—p. 730.
Fear in Elderly People. P. Williamson.—p. 739.

Journal of Experimental Medicine, New York

98:399-520 (Nov.) 1953. Partial Index

Inhibition of Theiler's Encephalomyelitis Virus (GDVII Strain) of Mice by an Intestinal Mucopolysaccharide. B. Mandel and E. Racker. —p. 399.
Acute Hepatitis Associated with Mouse Leukemia. J. B. Nelson.—p. 433.
Estimation of Circulating Antibody-Antigen Complex. L. A. Sternberger, F. Maltaner and J. DeWeerdt.—p. 451.
Study of Illness in Group of Cleveland Families: VII. Transmission of Acute Non-Bacterial Gastroenteritis to Volunteers: Evidence for Two Different Etiologic Agents. W. S. Jordan Jr., I. Gordon and W. R. Dorrance.—p. 461.
Studies on Pathogenesis of Fever: I. Effect of Injection of Extracts and Suspensions of Uninfected Rabbit Tissues Upon Body Temperature of Normal Rabbits. I. L. Bennett Jr. and P. B. Beeson.—p. 477.
Studies on Pathogenesis of Kernicterus with Special Reference to Nature of Kernicteric Pigment and Its Deposition Under Natural and Experimental Conditions. F. S. Vogel.—p. 509.

Journal of Immunology, Baltimore

71:169-260 (Oct.) 1953. Partial Index

Studies on Specific Soluble Proteins of Pasteurella Pestis and P. Pseudotuberculosis: II. Complement-Fixing and Immunogenic Properties. S. C. Seal.—p. 169.
Performance of Mumps Neutralization Tests in Suckling Mice. L. Kilham, H. W. Murphy and J. R. Overman.—p. 183.
Protective Effect of Sera from Animals Treated with Different Brucella Antigens upon Brucella Infection in Mice. I. Live and L. A. Giuliani. —p. 187.
Serologic Studies on North American Blastomycosis: Studies with Soluble Antigens from Untreated and Sonic-Treated Yeast-Phase Cells of Blastomyces Dermatitidis. D. S. Martin.—p. 192.
Effect of X-Irradiation on Immunity of Mosquitoes to Malarial Infection. L. A. Terzian.—p. 202.
Preparation and Properties of Cold Hemagglutinin. R. S. Gordon Jr. —p. 220.
Capillary Agglutination Test for Bovine Q Fever. L. Luoto.—p. 226.
Serotypic Recombination in Salmonella. J. Lederberg and P. R. Edwards. —p. 232.
Studies of Interference Phenomenon in Mustard-Treated Hosts. J. Fong, R. Louie and S. S. Margherita.—p. 246.
Influenza Virus Multiplication in Homologously Transplanted Mouse Fetal Tissues. R. R. Wagner.—p. 253.

New England Journal of Medicine, Boston

249:635-672 (Oct. 15) 1953

*Observations on Use of Cortisone and ACTH in Rheumatoid Arthritis. W. S. Clark, H. O. Tonning, J. P. Kulka and W. Bauer.—p. 635.
Modern Concepts in Treatment of Otitis Media. B. Zonderman.—p. 643.
Approach to "Skid Row" Problem in Boston. D. J. Myerson.—p. 646.
Enzymes in Clinical Medicine: Recent Developments in Practical Application of Enzymes to Clinical Medicine. H. J. Tagnon.—p. 650.
Mid-Thigh Amputation in Patient with Hemophilia. J. H. Crandon, L. Staudinger Jr. and E. Friedman.—p. 657.

Cortisone and Corticotropin in Rheumatoid Arthritis.—Clark and associates describe observations on the use of cortisone and corticotropin in 52 patients with rheumatoid arthritis. Thirty-four patients received cortisone and 10 corticotropin alone; 8 were given both hormones, but on separate occasions. Thus 42 patients received cortisone and 18 corticotropin. The dosage of cortisone varied, initial high doses being used only in the early period. Lower starting doses, ranging between 100 and 150 mg. a day, were more satisfactory. Very low initial doses, followed by increasing amounts until improvement resulted, were unsatisfactory in that therapeutic objectives were unnecessarily delayed. Maintenance doses of cortisone varied in relation to therapeutic objectives and side-effects. A maintenance dose was considered the amount of hormone that, in addition to conservative measures, produced subjective and functional improvement of a degree permitting a substantial increase in both comfort and functional capacity. Although a minimum of 75 mg. a day was required for complete vocational rehabilitation, subjective and functional improvement was noted in several patients on lower dosage. After the initial reduction acetylsalicylic acid (aspirin) was resumed in full doses. When symptoms became stabilized with a dose of 100 mg. a day in addition to acetylsalicylic acid, cortisone was again reduced by 12.5 mg. every two or three weeks to the lowest level at which substantial improvement could be maintained. Similar principles applied to the use of corticotropin in determining initial and maintenance doses. Initial doses of 60 to 80 mg. a day were satisfactory. It was found that cortisone and corticotropin can favorably alter the manifestations of rheumatoid arthritis. The most impressive response is a decrease in pain and stiffness and in consequence an improved functional status. Objective improvement is generally less than subjective improvement. Some histological evidence of joint inflammation persists even after long-term therapy in doses sufficient to produce hypercorticism. Progression of the disease can occur under adequate hormone therapy as evidenced by x-ray examination. All patients do not respond favorably. Hormone therapy should not be employed until maximum benefit from conservative measures has been established and should always be combined with such measures. The total improvement that accrues is frequently a direct result of rehabilitation procedures facilitated by the hormones. There is as yet no evidence that either agent alters the remission rate or the natural course of rheumatoid arthritis. The hazards of hormone therapy include not only those directly associated with hypercorticism but also psychological reactions that lead to a failure to adhere to conservative measures of proved value in the treatment of arthritis.

New Jersey Medical Society Journal, Trenton

50:443-486 (Oct.) 1953

Anatomy of Veins of Human Heart with Special Reference to Normal Anastomotic Channels. V. Parsonnet.—p. 446.
Glaucomato-Cyclitic Crises: Report of Two Cases. J. L. Harris.—p. 453.
Evaluation of Certain Newer Products in Arthritis Therapy. J. W. Gray and E. Z. Merrick.—p. 456.
Beriberi Heart Disease. M. C. Becker, A. Yaguda and E. J. Tyrrell.—p. 462.
Postoperative Urinary Suppression: New Concepts of Cause and Treatment. S. E. Kramer and B. M. Kramer.—p. 468.
Carotid Sinus Syndrome. J. G. Rogers.—p. 473.

New York State Journal of Medicine, New York

53:2141-2272 (Oct. 1) 1953

Observations Regarding Therapy of Bleeding Peptic Ulcer. A. P. Ingegno.—p. 2187.
Emergency Treatment of Bleeding Esophageal Varices and Results of Portacaval Shunts in 90 Patients. R. R. Linton.—p. 2192.
Long-Range Evaluation of Modern Methods in Treatment of Chronic Ulcerative Colitis. Z. T. Bercovitz.—p. 2200.
Treatment of Hepatic Tumors. G. T. Pack and T. R. Miller.—p. 2205.
Diagnosis and Treatment of Polyps of Rectum and Colon. A. D. Hennessy.—p. 2208.
Hypobaric Sacral Anesthesia for Anorectal Surgery. E. Granet and E. J. De Polo.—p. 2211.
Newer Concepts in Treatment of Severe Burns. W. L. Estes, Jr.—p. 2217.
Abuses and Uses of Antibiotics. P. H. Long.—p. 2222.
Neurology in General Practice. W. B. Hamby.—p. 2225.
Detection of Early Signs of Heart Disease in General Practice. E. Hochstein.—p. 2227.
Value of Cod Liver Ointment and Cod Liver Oil Lotion in Treatment of Dermatoses. H. G. Grayzel, C. B. Heimer and R. W. Grayzel.—p. 2233.
Treatment of Refractory Acne with Fractionated Type of Liver Extract. N. Pensky and N. Goldberg.—p. 2238.
Surgical Treatment of Dysmenorrhea. L. K. Stalker.—p. 2240.

Plastic & Reconstructive Surgery, Baltimore

12:225-302 (Oct.) 1953. **Partial Index**

*Misuse of Prolabium in Repair of Bilateral Cleft Lip. W. M. Adams and L. H. Adams.—p. 225.
Study of Revascularization of Stored Homologous Bone Grafts by Means of Radioactive Phosphorus. C. L. Kiehn and D. M. Glover.—p. 233.
Fluid Therapy in Plastic Surgical Patient. F. L. Ashley and H. G. Love.—p. 241.
Pediatric Care of Burned Children. A. H. Hurd.—p. 260.
Experiences with ACTH in Treatment of Burns. G. W. Pierce and E. H. Klabunde.—p. 265.
Behavior of Split Thickness and Dermal Skin Grafts in Peritoneal Cavity: An Experimental Study. C. Horton, N. Georgiade, F. Campbell and others.—p. 269.
Artificial Urethra Constructed from Bladder Flap: Preliminary Report. B. W. Young and R. L. Mills.—p. 279.
Complete Cross-Filing System for Plastic Surgery Clinic. W. M. Adams, L. H. Adams and A. R. Vinicoff.—p. 285

Misuse of Prolabium in Repair of Bilateral Cleft Lip.—This report demonstrates that in repairing bilateral cleft lip in infants, a choice must be made between a procedure wherein the prolabium is utilized to construct the columella and one wherein the prolabium is used to form the central portion of the lip. The first of these procedures gives a well-formed nose and lip. Ultimately, however, the lip becomes so elongated that it requires a shortening operation. The use of the prolabium to form the entire central portion of the lip is preferable. The tip of the nose may continue to be flattened, though this deformity is less serious than the elongation of the lip and is more easily corrected after the child acquires an adult face. It would be desirable to combine the virtues of these two methods, but, since this is impossible, it is better to forego a nice immediate cosmetic result in favor of a superior ultimate result. From an experience covering 12 or 15 years, the authors are convinced that the prolabium should be used in its entirety in reconstruction of the cleft lip. The use of the prolabium in the formation of the columella gives consistently poor results.

Psychosomatic Medicine, New York

15:371-562 (Sept.-Oct.) 1953. **Partial Index**

Emotional Elevations of Blood Pressure in Trained Dogs: Possible Relation to Origin of Hypertension in Humans. C. M. Wilhelmj, T. F. McGuire, J. McDonough and others.—p. 390.
Role of Olfaction in Normal and Neurotic Behavior in Animals: Preliminary Report. J. H. Masserman and C. Pechtel.—p. 396.
Experiments in Substitution of Symptoms by Hypnosis: II. P. F. D. Seitz.—p. 405.
Some Patterns of Somatic Displacement. J. G. Kepecs.—p. 425.
Sympathetic Activity and Perception: Approach to Relationships Between Autonomic Activity and Personality. E. Callaway III and S. V. Thompson.—p. 443.
Psychophysiological Responsiveness to Psychological Stress in Early Chronic Schizophrenic Reactions. M. Williams.—p. 456.
Characteristics of Psychoneurotic Patients and Their Families as Revealed in General Morbidity Study. J. Downes and K. Simon.—p. 463.
Nutritional Anemia in Children: Importance of Emotional, Social, and Economic Factors. G. H. Pollock and J. B. Richmond.—p. 477.
Some Emotional Factors in Infertility. T. Benedek, G. C. Ham, F. P. Robbins and B. B. Rubenstein.—p. 485.
Pruritus Ani: Psychiatric Study. I. Macalpine.—p. 499.
Gastric Acidity and Normally Produced Anxiety. M. H. Heller, J. Levine and T. P. Sohler.—p. 509.
Chronic Ulcerative Colitis: Effect of Specific Psychotherapeutic Measure. C. G. Craddock Jr.—p. 513.

Public Health Reports, Washington, D. C.

68:921-1020 (Oct.) 1953. **Partial Index**

Tuberculosis: Time for Decision. T. Parran.—p. 921.
Treatment of Tuberculosis. J. B. Amberson.—p. 928.
Report of Case of Rat-Bite Fever Due to S. Moniliformis. R. L. Griffith and D. W. McNaughton.—p. 947.
*Sanitary Quality of Crushed and Cubed Ice as Dispensed to Consumer. V. D. Foltz.—p. 949.
Public Health Laboratory: Yesterday, Today, and Tomorrow. A. V. Hardy.—p. 968.
Mapping a Program of Public Health for Ethiopia and Eritrea. H. R. O'Brien.—p. 976.
Epidemiological Study of Plantar Warts Among School Children. W. K. Grigg and G. Wilhelm.—p. 985.
Program for Protection of Research Employees Against Pathogenic Hazards. J. Black, J. M. Lynch and I. Ladimer.—p. 989.
Trend of Multiple Cases of Poliomyelitis in Household Units. M. Siegel and M. Greenberg.—p. 996.

Sanitary Quality of Crushed and Cubed Ice.—Sanitarians have formulated standards of quality for commercial ice and have introduced regulations covering items such as (*a*) the water supply used, (*b*) the plumbing and toilet facilities of the premises and surrounding area, and (*c*) the employees' health. If such regulations are adhered to, the ice (usually in 300 lb. [136.2 kg.] cakes) should be of high sanitary quality when pulled from the freezing tanks. The cake ice in the area covered by the studies described in this report is of high quality. No coliform or clostridia organisms were detected, and the average standard plate count for the 10 samples was only 6.8 per milliliter of water. This paper reports more detailed studies of the sanitary quality of both crushed and cubed ice. Samples of ice were collected from hotels, restaurants, soda fountains, hospitals, and soft-drink parlors in central Kansas. They include 77 samples of crushed ice and 37 samples of ice from automatic ice cube machines. Only 10 (13%) of the 77 samples of commercial crushed ice were found to be free of coliform bacteria, and 17 (46%) of the 37 samples of cubed ice were free of coliform organisms. The dominant coliform types isolated from the 87 samples giving positive and doubtful presumptive tests were Escherichia coli from 41 samples and Aerobacter aerogenes from 46. In some samples only one type of the coliform group appeared to be present; but in the majority of the samples a mixture was observed. It appears that most of the microorganisms found in crushed ice when it reaches the consumer have gained entrance at one or more points between the freezer and the consumer. Even a casual examination of the average ice plant and other facilities for handling ice will indicate many possible points of contamination. The fact that ice from automatic freezers in hospitals was found to be sanitary whereas most of that from machines in retail establishments was found to be of poor sanitary quality indicates an absence of sanitary precautions in machine care and in dispensing techniques in the latter. It is hoped that the facts presented will stimulate additional research on the relative significance of the many factors contributing to the poor quality of crushed and cubed ice.

Rhode Island Medical Journal, Providence

36:481-552 (Sept.) 1953

Bronchiectasis. O. C. Brantigan.—p. 499.
Medicine and the Bible. L. A. M. Krause.—p. 507.
Diagnosis and Treatment of Lesions of Shoulder. D. M. Bosworth. —p. 512.

Rocky Mountain Medical Journal, Denver

50:843-916 (Nov.) 1953

Presidential Address. C. D. Bonham.—p. 865.
Retiring President's Address. K. B. Castleton.—p. 870.
Spinal Nerve Root Pain. T. R. Love.—p. 873.
Diabetic Lipemia: Clinical Significance of Newer Knowledge. B. Phibbs. —p. 876.
Antibiotics—Their Use and Abuse. J. F. Waldo.—p. 879.

Surgery, Gynecology and Obstetrics, Chicago

97:529-652 (Nov.) 1953

Intra-Arterial and Intravenous Transfusion: Controlled Study of Their Effectiveness in Treatment of Experimental Hemorrhagic Shock. J. V. Maloney Jr., C. M. Smythe, J. P. Gilmore and S. W. Handford. —p. 529.
Experimental Study of Treatment of Whole Thickness Burns Complicated by Open Fracture. H. S. Allen, J. L. Bell and S. W. Day.—p. 541.
Treatment of Fractures Complicated by Contiguous Burns: Experimental Study in Dogs. W. T. Fitts Jr., B. Roberts, W. J. Grippe and others. —p. 551.
Intussusception Ureterectomy: Method of Removal of Ureteral Stump at Time of Nephrectomy Without Additional Incision. D. F. McDonald. —p. 565.
*Bilateral Total Adrenalectomy in Patients with Metastatic Carcinoma. H. Krieger, W. E. Abbott, S. Levey and L. Babb.—p. 569.
Construction and Reconstruction of Vagina. H. Conway and R. B. Stark. —p. 573.
Beta-Glucuronidase Studies in Women: VI. Premenopausal Vaginal Fluid Values in Relation to Invasive Cervical Cancer. S. C. Kasdon, F. Homburger, E. Yorshis and W. H. Fishman.—p. 579.
*Cystectomy for Carcinoma of Urinary Bladder. F. A. Lloyd and G. Baumrucker.—p. 584.
Surgical Significance and Management of Pathologic Blood Clotting. G. H. Pratt.—p. 589.
Studies of Hemodynamic Changes in Humans Following Induction of Spinal Anesthesia: IV. Observations in Low Spinal Anesthesia During Surgery. S. M. Sancetta, R. B. Lynn, F. A. Simeone and others. —p. 597.
Treatment of Inguinal Hernia in Infancy and Childhood. G. B. Packard and C. H. McLauthlin.—p. 603.
Symptomatology and Management of Prostatic Calculi. D. Presman. —p. 608.
Infrared Phlebogram in Diagnosis of Breast Camplaints: Analysis of 1,200 Cases. L. C. Massopust and W. D. Gardner.—p. 619.
Carcinoma of Male Urethra: One Stage Surgical Treatment by Radical Perineal Excision and Rectal Transplantation of Divided Trigone. J. J. Kaufman and W. E. Goodwin.—p. 627.
Experimental Repair of Exstrophy of Bladder Without Cystectomy by Using Free Fascial Graft. A. C. Baret, W. E. DeMuth Jr., J. J. Murphy and M. W. Muir.—p. 633.

Bilateral Total Adrenalectomy for Metastatic Carcinoma.—The rationale for bilateral adrenalectomy in metastatic carcinoma is based on both clinical and experimental observations. The growth of both breast and prostatic carcinoma is influenced by alteration of the sex hormone pattern, and hormones have been used with some success in metastatic carcinoma of the breast and prostate. The relapse that occurs in patients who have been castrated or have received hormone therapy is thought to be the result of androgen production by the adrenal cortex. It has been demonstrated that patients with cancer excrete abnormal amounts of steroids in the urine. The present report is based on data obtained from five patients with metastatic carcinoma. Three had carcinoma of the breast; one had carcinoma of the prostate with skeletal metastases; and one had widespread melanosarcoma. The patients were admitted to the metabolic division of University Hospitals of Cleveland and were studied both preoperatively and postoperatively. Other more accepted forms of therapy had been or were tried prior to performing total adrenalectomy. A brief description of the technique of adrenalectomy is presented. The operation was well tolerated by all the patients and after the first few postoperative days, other than the administration of cortisone, they were managed like any postoperative patient. The profound metabolic changes that follow bilateral adrenalectomy quickly reverted to normal under adequate cortisone therapy. The usual maintenance need of cortisone was found to be 25 mg., twice a day, although different patients received from 37.5 to 75 mg. daily in divided doses. Whenever these patients are subjected to added stress such as infection, injury, or further operations it is necessary to increase the cortisone dosage. The patients with metastatic carcinoma of the breast demonstrated for varying periods an increased feeling of well being, increased appetite, and relief of pain. Objective improvement is best demonstrated by correction of negative calcium balance and hypercalcemia. These changes persist for varying periods of time. Adrenalectomy had no demonstrable influence on the clinical course of the patient with melanosarcoma.

Cystectomy for Carcinoma of Urinary Bladder.—Lloyd and Baumrucker during the years 1945 to 1952 treated 402 patients with carcinoma of the urinary bladder at the Veterans Administration Hospital, Hines, Ill. They performed 50 cystectomies and carried out diversion of the urine without removing the bladder in an additional 36. Although some of these patients are too recently treated for a five year follow-up, the authors feel that an objective appraisal of the results at this time may be of some value. Of the 50 patients who underwent cystectomy, 38 died, 29 during the first year, 3 each during the second and third years, 1 during the fourth, and 2 during the fifth year. Of the 12 who are still alive, only three have so far lived longer than 5 years. Total cystectomy is a trying ordeal for the patient, and it is often accompanied by severe morbidity, and a prolonged convalescence. Although the immediate mortality is not high the long-term survival rate is low. Chronic pyelonephritis resulting from ureterosigmoidostomy is the most important cause of death. This may occur regardless of the skill of the operator or the technique employed. Cutaneous ureterostomy is safer, but it is messy, difficult to take care of, and not devoid of complications. The removal of the urinary bladder offers a prospect of cure only if it is done very early in the course of the disease. But performed at this stage the accompanying diversion of the urine carries with it such a high morbidity and ultimate mortality that the patient will survive far longer and in far greater comfort if he is treated by more conservative means. Until a safer and more satisfactory method of diversion of the urine is devised, expanding the scope of the operation will do little if anything to improve the long term survival rates. Cystectomy is not justified as a palliative procedure in advanced carcinoma of the urinary bladder. It should be reserved for those cases in which no other form of treatment offers a prospect of relief.

U. S. Armed Forces Med. J., Washington, D. C.

4:1543-1666 (Nov.) 1953. **Partial Index**

New Anticoagulant for Routine Laboratory Procedures: Comparative Study. C. H. Schmidt, M. E. Hane and D. C. Gomez.—p. 1556.
Psychiatry in Korean Campaign: Historical Review. A. J. Glass.—p. 1563.
Chronic Diarrhea: Clinical and Laboratory Study of 39 Cases. H. Kraus. —p. 1584.
Penicillin-Streptomycin Bone Bank. R. W. Augustine, W. E. Landmesser Jr., F. D. O'Brien and others.—p. 1587.
Cross Resistance of Bacteria to Antibiotics. M. H. Fusillo and D. M. Kuhns.—p. 1600.
Reactions to Penicillin Gixen Orally in Mass Prophylaxis. C. B. White. —p. 1606.
Prevention of Airsickness During Training Flights. H. I. Chinn, B. A. Strickland Jr., O. H. Waltrip and J. D. McGeary.—p. 1609.
Hypertension and Diabetes Detection Program. F. P. Keaney, J. G. Stubenbord, M. M. McLean and F. A. Bove.—p. 1613.

FOREIGN

Anales de la Facultad de Medicina, Montevideo

38:163-232 (May-June) 1953. **Partial Index**

*Encephalomyelitis in Course of Arsenical Therapy. R. A. Piaggio Blanco, H. Malosetti, L. Perez Achard and A. Ferrari Forcade.—p. 163.
Periarteritis Nodosa. J. C. Pla, G. Fernández, M. Tornaria and Others. —p. 171.
Spontaneous Cerebellar Hematoma. Surgical Therapy. M. Ferrari, R. Arana Iñiguez, R. Nin and O. Etorena.—p. 179.
Surgical Treatment of Mitral Stenosis. A. Sanjinés Bros, L. Correa and J. Mendivil.—p. 199.

Encephalomyelitis from Arsenic Therapy.—Encephalomyelitis from arsenic therapy is extremely rare, but relatively less rare in young adults, pregnant women, and patients with asymptomatic syphilis. The prognosis is grave. The subject of this report is a 31-year-old woman, the mother of two normal children. A positive Wassermann reaction was noted in the course of her third pregnancy. In the fifth month of pregnancy, she was given two injections of neoarsphenamine at an interval of five days. Two days after the second injection, a typical arsenical encephalopathy developed. The neurological symptoms were acute and in agreement with the changes of the electroencephalogram. Treatment consisted in administration of cortisone. In the first stage of cortisone treatment, the marked clinical improvement of the patient paralleled regression of abnormal tracings in the electroencephalogram. In the second stage of treatment, the clinical improvement of the patient progressed uninterrupted whereas the electroencephalographic tracings were still disturbed. Upon control of the neurological symptoms and discontinuation of cortisone treatment, the neurological symptoms continued under permanent control and the electroencephalographic tracings became normal. The pregnancy terminated in the delivery of a normal child at full term. The authors believe that in the case reported the parallel improvement of the neurological symptoms and regression of abnormal tracings in the electroencephalogram during the first stage of the treatment constitute proof of the therapeutic value of cortisone in arsenical encephalomyelitis. Persistent disorders of the electroencephalographic tracings after control of neurological symptoms showed a normal reaction of the cerebral cortex to cortisone; this reaction is more marked in pregnant women. The tracings became normal as soon as the cortisone cortical reaction was not elicited on discontinuation of the treatment.

Archiv für klinische Chirurgie, Berlin

277:117-244 (No. 2) 1953. **Partial Index**

*Experimental Studies on Pathogenesis of Osteomyelitis. G. Grundmann. —p. 117.
Hepatorenal Syndrome in Surgical Diseases of Gallbladder and Its Pathogenesis. D. Soyka.—p. 143.
Osteofibrosis Deformans in Juvenile Patients and Its Differential Diagnosis. H. Hellner.—p. 160.
Resection of Lung in Patients with Bronchial Carcinoma in Seventh Decade of Life. R. H. Jenny.—p. 190.
*Gastrectomy in Patients with Gastroduodenal Ulcer: Report on 1,535 Resections. H. Berger and H. Reissigl.—p. 223.

Pathogenesis of Osteomyelitis.—According to Grundmann, acute hematogenous osteomyelitis is an infectious disease and presents the third phase of a cycle extending from local infection through generalization to organic manifestation. The dissemination of the pathogenic agents from the primary focus occurs continuously and in small amounts and results in a change of the cells of the organism of the host. The reaction of this organism to the first invasion of the pathogenic agents differs from that to repeated invasion of these agents while the organism of the host passes through three stages, namely, incubation, hyperergy, and immunity. Depending on the condition of the reaction, various aspects of the disease may be associated with the same amount of pathogenic agents of the same virulence extending from the highly acute and rapidly fatal generalized infection to the chronic infection. Osteomyelitis is only a specific form of generalization. Localized persistence of the pathogenic agents in the bone marrow constitutes the problem of the genesis of osteomyelitis. The author succeeded in producing osteomyelitis in rabbits by eliciting in the bones a hyperergic reaction. The animals that had been sensitized with a Micrococcus (Staphylococcus) vaccine were exposed to ultrasonics directed toward the region of the head of the tibia and the proximal portions of radius and ulna, followed immediately by the intravenous injection of an eliciting dose of micrococci. A localized osteomyelitis was thus produced without gross trauma in the sensitized rabbits at a previously determined area with a definite dose of infectious substance, constant virulence of the pathogenic agents, a determined stimulus, and a certain condition of reaction that was established by the precipitin reaction. The time of the dissemination of the pathogenic agent is important. Persistence of massive and virulent doses of the pathogenic agent may occur in every stage of the allergy. A certain behavior of the terminal vessels of the metaphyses of the bones is required for the adherence of the pathogenic agents. Peristasis and stasis are instrumental in slowing of the blood flow and in hyperemia; they permit prolonged and increased persistence of the pathogenic agents in the blood vessels; they also cause passage of the pathogenic agents through the vascular walls the permeability of which has been changed. Depending on the condition of the reaction a more or less strong stimulus is required for eliciting peristasis or stasis. In the hyperergic stage the circulation shows an increased tendency to reaction. In the state of hyperergy, the smallest stimuli, also occasional trauma, are sufficient to cause peristasis and stasis at the area to which force is applied, i. e., the bone marrow. Summation of stimuli is presented by hyperergy, repeated invasion of the blood vessels by the pathogenic agents, and by local trauma. The reaction of the changed, hyperergic endothelium of the capillaries and the tissues to the prolonged and increased persistence of the pathogenic agents in the blood vessels is described as abnormal because the still immature protective measures of the organism are inopportunely mobilized. Thus osteomyelitis becomes manifest. Many additional factors beside the allergic-hyperergic component contribute to the disease aspect of osteomyelitis. The properties of the pathological agents are responsible for the pattern of the course of the disease. Fluctuations in the immunological condition may change the tendency to reaction in the terminal blood vessels and in the tissues. Nutrition, trauma, and climate are some of the eliciting exogenous factors; age and sex are endogenous factors. Persons with abnormal blood perfusion caused by various influences are predisposed to osteomyelitis, since in them a weak stimulus is sufficient to cause persistence of the pathogenic agents in the bone marrow.

Gastrectomy for Gastroduodenal Ulcers.—At the surgical clinic of the University of Innsbruck, Austria, 1,535 patients with gastroduodenal ulcers underwent gastrectomies between 1934 and 1952. Thirty-three of the 1,175 patients whose ulcers were not complicated by hemorrhage or perforation died, a mortality rate of 2.8%. Billroth 2 gastric excision, as modified by Reichl, was carried out in most of the patients, and Finsterer's advice was taken in removing two-thirds to three-fourths of the stomach. Exclusion gastrectomy without preservation of the pylorus was performed in 331 patients, 8 of whom died, a mortality rate of only 2.4%. The authors, therefore, do not agree with other workers that exclusion gastrectomy with preservation of the pylorus is associated with less risk than that without. Early resection is the method of choice for ulcers complicated by massive hemorrhage and for recurrent bleeding ulcers, while primary resection is indicated in perforating ulcer with a long history of gastric disturbance. The authors strongly emphasize that late complications, such as bleeding and repeated bleeding, perforation and repeated perforation, malignant degeneration and additional fatalities resulting from late operations for persistent ulcers associated with severe disturbances, are responsible for the unfavorable results revealed by all the statistics on conservative treatment and palliative surgical intervention respectively. Better results of late resection for bleeding ulcers may be obtained by adequate preoperative and postoperative treatment and by improved anesthesia and sufficient blood transfusions. Preoperative x-ray examination of the gastrointestinal tract should be omitted in patients with bleeding ulcer in view of the unreliable findings resulting from the frequent coagulation of the blood in the ulcer niche. Supportive treatment of heart and circulation is imperative. Preoperative evacuation with the stomach tube is required in patients with stenosis of the pylorus associated with uncomplicated peptic ulcer. In these patients residual amounts of contrast medium from the last x-ray examination of the gastrointestinal tract should be removed preoperatively to prevent delay in normal postoperative intestinal peristalsis. Patients were kept in bed until the ninth postoperative day, and drugs stimulating peristalsis were not instituted before the fourth postoperative day.

British Heart Journal, London

15:369-480 (Oct.) 1953

Mechanism of Sudden Death in Dissecting Aneurysm with Intracardiac Rupture. A. Pick and G. Mininni.—p. 369.
Observations Relating to Aetiology of Patent Ductus Arteriosus. R. G. Record and T. McKeown.—p. 376.
Plasma Lipids in Coronary Artery Disease. M. F. Oliver and G. S. Boyd. —p. 387.
Clinical and Radiological Assessment of Pulmonary Arterial Pressure in Mitral Stenosis. L. G. Davies, J. F. Goodwin, R. E. Steiner and B. D. Van Leuven.—p. 393.
•Laevocardia with Transposition of Abdominal Viscera. M. Campbell and P. Forgacs.—p. 401.
Patent Ductus Arteriosus with Pulmonary Hypertension. J. A. Cosh. —p. 423.
Electrocardiogram on First Day of Life. I. Kessel.—p. 430.
Left Auricular Appendage in Mitral Stenosis. F. McKeown.—p. 433.
•Use of Pure Veratrum Alkaloids Neogermitrine and Protoveratrine in Hypertension. A. E. Doyle and F. H. Smirk.—p. 439.

Levocardia with Transposition of Abdominal Viscera.—Campbell and Forgacs describe 14 cases of congenital heart disease with transposition of the abdominal viscera but with levocardia, and they compare them with 19 similar cases that have been reported recently. In a lesion of such complexity, only the 10 with necropsies can provide full details of the anatomic changes; but including these there are 10 of their own cases and 14 others that have been investigated, generally by angiocardiography and by cardiac catheterization. These 24 have been analyzed and form the basis of the discussion. The patients in these cases fall into two groups (*a*) those in whom the superior vena cava and venous atrium are on the left, i. e., transposed with the abdominal viscera, and (*b*) those in whom the venous atrium is on the right as normally, but in whom cyanosis and disability are due to the associated defects. The conclusion of Forgacs in 1947 that congenital heart disease is the rule in this type of heterotaxy is confirmed, as is the transposition of the atriums in the former group, but the assumption that transposition of the atriums is the fundamental cause of the other defects is no longer tenable. In those with the venous atrium transposed to the left, the P-wave in lead 1 is inverted, and there is generally a single superior vena cava, also transposed to the left, and a right-sided aortic arch. As a rule, the aorta and pulmonary trunk are transposed, but this adaptation is rendered ineffective by the presence of septal defects and pulmonary stenosis or atresia. In those with the venous atrium on the right as normally, the P-wave in lead 1 is generally upright, and there is often a superior vena cava on both sides, the left generally entering the right atrium through the coronary sinus. The aortic arch may be on either side. As in the first group, the aorta and pulmonary trunk are often transposed, and there are atrial and ventricular septal defects, often a single atrium or single ventricle, and generally pulmonary stenosis or atresia. In view of the different arrangement of the atriums in these two groups, a different pattern of the other defects in the heart might be expected. They are, however, found to be very similar: atrial and ventricular septal defects, partial or complete transposition, and pulmonary stenosis or atresia are often found in both. Evidently the failure to decide on which side the development is to take place causes difficulties in the complex processes of growth and rotation that divide the heart into its two sides and bring the aortic and pulmonary rings opposite the correct ventricle. A Blalock-Taussig operation should be helpful in most cases of both groups though perhaps the result cannot be expected to be as good as in uncomplicated cases of Fallot's tetralogy. If the patient is sufficiently disabled the operation can be advised whenever the blood flow to the lungs is diminished and suitable pulmonary arteries are present.

Pure Veratrum Alkaloids for Hypertension.—Doyle and Smirk studied the effects of therapy with veratrum given orally in hypertensive patients, using the pure alkaloids neogermitrine and protoveratrine, and various alkaloidal mixtures. They also compared the effects of neogermitrine and protoveratrine given by mouth and by injection, with particular reference to toxic manifestations. They found that minute doses such as 0.1 mg. of neogermitrine or 0.15 mg. of protoveratrine, when given intravenously in hypertensive patients, produced falls of blood pressure to normal or even to hypotensive levels. Similar effects were obtained with subcutaneous or oral administration, provided larger doses (0.4 mg.) were given. The therapeutic margin between toxic and hypotensive doses was not distinctly greater with the pure alkaloids than with mixtures. The alkaloids that lower the blood pressure also lead to the characteristic toxic manifestations. The blood pressure may be reduced more readily without toxic symptoms in labile than in fixed hypertension. Toxic effects have been less frequent when the veratrum alkaloids have been given in small subdivided doses intravenously than when administered by mouth or subcutaneously. Of 65 hypertensive patients in whom veratrum treatment was attempted, 15 obtained a good measure of control over the level of the blood pressure. Although a good control over the blood pressure could be obtained for a time in a larger number of patients, the margin between therapeutic and toxic doses narrowed, and effective treatment could not be maintained in all patients who began well.

Giornale di Clinica Medica, Parma

34:1001-1124 (Sept.) 1953. **Partial Index**

Acute Insufficiency of Right Side of Heart (Acute Cor Pulmonale) in Two Cases of Pulmonary Neoplasm. G. Micheli Pellegrini and S. Bardelli. —p. 1001.
Psychic Syndromes in Basedow's Disease and Thyroidectomy: Therapeutic Efficacy of Sleep. R. Rossini and P. Dazzi.—p. 1018.
•Behavior of Electrocardiogram in General Controlled Hypothermia. G. Capretti, E. Bezzi and R. Luccini.—p. 1029.

Electrocardiograms During Controlled Hypothermia.—Electrocardiographic changes occurring during controlled hypothermia were studied in animals and in human beings. The neurovegetative system was blocked with drugs that have an elective action on the nervous conduction and the peripheral chemical effectors. Hypothermia was produced by means of an original electromechanic apparatus. It was induced gradually in a group of dogs until they died. There was a gradual decrease in the heart rate that at 20 C became 20 per minute. At this temperature there were pronounced changes in the QT interval, the ST segment, and the T-wave. Hypothermia was stopped in another group of dogs at a body temperature of 25 C. At this temperature, the heart rate was half of the initial value, and the electrocardiographic changes were never so pronounced as in the first group of dogs. They involved mainly the PR segment, the electric systole, and the phase of repolarization. These became normal as soon as the temperature was restored to normal. Interventions were performed on the bloodless heart and great vessels of dogs at a body temperature of 25 C. The circulation was interrupted by closing the venae cavae and the azygos for 13 to 16 minutes. On opening the pleura and the pericardium, there were no significant electrocardiographic changes. During the operation there was a pronounced change in the ST segment, which began to return to normal after the intervention was concluded. The most important manifestations of myocardial excitation (extrasystole and block) that are usually observed when this surgery is performed on bodies at normal temperature were inhibited. Moderate hypothermia (34-33 C) was induced in seven patients in whom operations were performed for duodenal ulcer and cancer of the stomach, bladder, and gallbladder. The major electrocardiographic alterations were seen in the phase of repolarization (ST segment and T-wave). These alterations, similar to those observed during ventricular impairment caused by overburden of the heart or ischemia, suggested a state of general impairment of the myocardium. A cause and effect relationship between controlled hypothermia and these alterations could not be established. They occurred mainly in patients who showed marked resistance to the induction of hypothermia (shivering and cyanosis). These changes are not marked when moderate hypothermia is induced, and they are easily reversible. They do not constitute a sufficient element to contraindicate the use of hypothermia.

Journal of Endocrinology, London

9:351-445 (Oct.) 1953. **Partial Index**

Parallel Biological Assays of Cortisone Equivalent of Dog's Adrenal Vein Blood. S. W. Bibile and M. Vogt.—p. 351.
Assay of Cortical Steroids by Mouse Eosinophil Test. S. W. Bibile.—p. 357.
Studies on Determination of Urinary Corticosteroids. C. de Courcy and C. H. Gray.—p. 391.
Chromatographic Investigation of Δ^4-3-Ketosteroids and α-Ketolic Steroids in Human Urine. C. de Courcy, I. E. Bush, C. H. Gray and J. B. Lunnon.—p. 401.
Influence of Placental Size on Foetal Growth in Man, with Special Reference to Multiple Pregnancy. T. McKeown and R. G. Record.—p. 418.
Urinary Excretion of Oestogrens and Pregnanediol at End of Pregnancy, During Labour and During Early Puerperium. T. E. T. Bradshaw and W. J. E. Jessop.—p. 427.

Lancet, London

2:893-946 (Oct. 31) 1953

Sociomedical Aspects of Diabetes Mellitus. R. E. Tunbridge.—p. 893.
Antibiotics in Chronic Bronchitis. J. R. May.—p. 899.
*Sputum in Chronic Bronchitis: Effects of Antibiotics. P. C. Elmes, K. Knox and C. M. Fletcher.—p. 903.
*Management of Adrenal Cortical Failure in Meningococcal Septicaemia. E. M. Buzzard, G. Higgins, L. P. A. Newborne and J. C. Pease.—p. 907.
Sickle-Cell Trait and Blood-Groups in Greece. C. Choremis, E. W. Ikin, H. Lehmann and others.—p. 909.
Antibody Formation in Allergic and in Normal People. D. D. Adams.—p. 911.
Dehydro-Ascorbic-Acid Level of Blood in Health and in Typhoid Fever. S. Banerjee and B. Belavady.—p. 912.
Lactic Acid in Treatment of Osteo-Arthritis. J. S. Lawrence.—p. 913.
Epiphrenic Oesophageal Diverticulum with Cardiac Pain. D. G. Julian.—p. 915.
Haemochromatosis of Heart. G. Bourne and R. J. R. Cureton.—p. 917.

Sputum in Chronic Bronchitis.—Twelve men and one woman between the ages of 42 and 68 with chronic bronchitis were given short courses of chemotherapy. Penicillin was given orally in doses of 200,000 units every four hours (1,000,000 units in each 24 hours) for seven days, chloramphenicol (Chloromycetin) in doses of 500 mg. four times daily for seven days, chlortetracycline (Aureomycin) in doses of 500 mg. four times daily for seven days, and sulfamethazine in doses of 1 gm. four times daily for seven days. The bacteriological and microscopic changes in the sputum and the clinical effects were observed. Although each drug, except sulfamethazine, temporarily reduced bacterial counts and the purulence of the sputum, the clinical effects were slight. None of the drugs used appeared suitable for the prophylaxis of acute exacerbations of chronic bronchitis, since they did not fulfill all of the following requirements of a drug for this purpose: It is inexpensive, free from toxic effects, effective against the whole range of bacteria responsible for chronic bronchitis, and not likely to impart acquired resistance. Foggy weather appeared to have a significant effect in increasing the purulence of the sputum only in patients with Hemophilus influenzae in their sputum.

Adrenal Cortical Failure in Meningococcic Septicemia.—Two patients, a 15-year-old boy and a 45-year-old man, with meningococcic septicemia and adrenal cortical failure were given specific treatment with Eucortone, a proprietary preparation of cortical extract of the suprarenal gland, and cortisone, in addition to penicillin, sulfamethazine, and sulfadiazine for treatment of the infection, and oxygen therapy for control of anoxia. Both patients survived. During the critical stage of the illness, frequent large doses of Eucortone given intravenously and of cortisone given by mouth are advised; cortisone should be given orally in an initial dose of 100 mg. followed by 25 mg. every six hours until the infection is controlled and the patient is out of danger, the dose being reduced to 12.5 mg. every six hours for the following two days and the total daily dose being thereafter halved every second day. An initial dose of 50 cc. of Eucortone intravenously should be given and followed by another dose of 20 cc. an hour later and further doses of 10 cc. hourly until the systolic blood pressure is maintained at 80 mm. Hg. The younger patient received a total dose of 290 cc. of Eucortone parenterally within five days and 200 mg. of cortisone intramuscularly and an additional 200 mg. of cortisone orally within seven days. The older patient was given a total dose of 810 cc. of Eucortone parenterally and 437.5 mg. of cortisone orally within seven days. These doses are large, but the demands on the adrenal cortex are known to be great in the presence of severe infection. The oxygen tent seems to be superior to other methods of oxygen therapy and proved lifesaving in the younger patient.

Minerva Pediatrica, Turin

5:669-716 (Aug. 31) 1953. **Partial Index**

*Two Cases of Tuberculous Meningitis Cured with Isoniazid Alone. A. Gentili and A. Paci.—p. 669.
Clinical and Therapeutic Observations on Some Cases of Hemophilia. E. Grasso and B. Fantuzzi.—p. 673.
*Therapeutic Action of Isoniazid on Infantile Tuberculosis. A. Rossini, A. Fattori and S. Gaballo.—p. 703.

Tuberculous Meningitis Treated with Isoniazid Alone.—Two children with tuberculous meningitis were treated with isoniazid alone and recovered. The first child, 2½ years old, was given 100 mg. of the drug orally in seven divided doses every day for 220 days and concurrently from 10 to 20 mg. intrathecally every day. This was given in two doses by the lumbar and suboccipital routes for 10 days, then only suboccipitally for 15 days, and thereafter either by the suboccipital or the lumbar route for 60 days. After this, three injections were given every week for more than 100 days until the child was discharged. The second child was a 5-year-old girl in whom the onset of the disease was sudden and temperature elevated. She received 100 mg. of isoniazid orally in six or seven divided doses every day for 150 days, then 150 mg. for 50 days. Concurrently she was given from 10 to 30 mg. of isoniazid in two divided doses by the suboccipital and the lumbar routes for 20 days and then in one dose by the suboccipital route for 40 days. The therapy was thereafter tapered off with injections by the suboccipital and lumbar routes at first three times and later two times a week until the child was discharged. There were no side-effects attributable to the drug. The temperature returned to normal, there was gain of appetite and weight, and the neurological symptoms were attenuated. The morphological and staining qualities of the tubercle bacilli were modified after the first injections of isoniazid, and the bacilli were no longer present in the spinal fluid after the first day of therapy. The fluid reactions were the same as those following streptomycin therapy. They were severer in the second patient in whom there was a sudden onset of numerous polynuclear and meningeal cells. These reactions subsided rapidly in both. The first child was clinically cured after 70 days, the second after 60 days of therapy. At the time of writing both children were well, 14 and 13 months respectively after therapy was instituted. Isoniazid gave as encouraging results as streptomycin. The combination of the two antibiotics may give even better results in treatment of tuberculous meningitis.

Isoniazid in Infantile Tuberculosis.—Isoniazid was given to 81 children, between 2 and 14 years of age, with tuberculosis. There were exudative allergic processes in 66 of them, active tuberculosis in 14, and tuberculous meningitis in 1. The dose of isoniazid administered varied, according to the patient's condition and age, from 4 to 5 mg. per kilogram of body weight daily in two doses after meals. The treatment was continued for from 9 to 165 days and was discontinued after about five months in the patients in whom there was slight or no improvement. Side-effects attributable to the drug were rare. Maculopapules appeared on the neck and thorax of two children and purpura on the face of another child, but they regressed rapidly. Therapy was discontinued definitively in two children in whom jaundice developed. The condition was aggravated in 12 children with the exudative allergic processes. According to Monaldi's pathogenetic concept, these forms are due essentially to the organism's reaction to a specific toxic stimulus. Since it seems that isoniazid determines an increase of the tuberculin reactivity, it may have also accelerated the disgregation of the few bacilli that were present in these allergic processes so that when the *in loco* specific toxic products were increased there may have also been an increase of the organism's reaction and therefore of the allergic exudate. There was a marked improvement in 7 of the 14 children with active tuberculosis in whom the disease was of recent origin. The condition remained unchanged in the other seven in whom the disease was of long-standing. The child with tuberculous meningitis is recovering. Caution should be used in administering isoniazid to patients with tuberculous exudative allergic processes since it may accelerate the bacterial lysis and thus extend the process.

Münchener medizinische Wochenschrift, Munich

95:1169-1192 (Oct. 30) 1953. **Partial Index**

Exceptional Position of Women in Accidents. A. Mayer.—p. 1169.
Iodine Prophylaxis with Iodized Salt Used for Cooking and Diffuse Toxic Goiter Due to Iodine. R. May.—p. 1172.
*Differential Diagnosis Between Diphtheria and Infectious Mononucleosis. A. Heller.—p. 1174.

Differential Diagnosis Between Diphtheria and Infectious Mononucleosis.—Of 26 patients who were admitted to the medical department of the Munich City Hospital with a diagnosis of diphtheria or being suspected of having diphtheria, diagnosis of tonsillitis was established in 12 and infectious mononucleosis in 14. This high percentage of an erroneous diagnosis in patients with infectious mononucleosis resulted to a large extent from the various initial symptoms of this disease. In an attempt to facilitate for the practitioner a correct diagnosis, Heller emphasizes the following points. 1. Considerable local petechiae in the area of the palate in a patient whose general condition is not or only slightly impaired and whose circulation is unaffected suggest infectious mononucleosis rather than diphtheria. 2. An initial temperature above 101 F (38.5 C), which may or may not rise further despite the usual treatment, is indicative of infectious mononucleosis. The initial temperature values in infectious mononucleosis are as a rule higher than the typical values in diphtheria, and there is parallelism between temperature and the coating of the pharynx in infectious mononucleosis. 3. Massively enlarged lymph nodes in the submandibular region, the angle of the jaw, along the sternocleidomastoid muscle as well as in the nuchal and inguinal regions, and increased size of the spleen are of considerable aid in nearly establishing the diagnosis of infectious mononucleosis. 4. Diagnosis may be confirmed by the hemogram with leukocytes ranging from 3,000 to 26,000, segmentation nuclei varying from 5 to 27%, lymphocytes from 50 to 95%, and monocytes from 10 to 23%, and by a positive Hanganatziu-Deicher reaction with a titer of 1:112 and more as compared to one of 1:56 in normal persons.

Nordisk Medicin, Stockholm

50:1353-1386 (Oct. 1) 1953. **Partial Index**

Variations in Blood Pressure and Pulse Rate During Exercise in Hypertensive Patients Treated with Hexamethonium. V. Rønnov-Jessen. —p. 1356.
*Benign Disorders of Esophagus Simulating Cancer of Esophagus. E. Madsen.—p. 1360.
Possibilities for Diagnosis of Cancer of Stomach. H. E. Blomquist. —p. 1363.
Liver Damage in Ulcerous Colitis. B. Andreassen and K. Austarheim. —p. 1370.

Benign Disorders of Esophagus Simulating Cancer of Esophagus.—From 1940 to 1950, 688 cases of true cancer of the esophagus were diagnosed in the Radium Station in Copenhagen. Madsen reviews the 108 benign disorders of the esophagus found in patients referred to the Radium Station for observation for esophageal cancer. Most frequent were cardiospasm, cardiovascular disease, brachyesophagus with dystopic cardia, esophagism, esophageal diverticulum, bulbar and pseudobulbar affections, hiatus hernia, and Plummer-Vinson's syndrome. In 68 cases of dysphagia in older persons, cancer was suspected because of the clinical symptoms. Greatest interest was attached to the 38 cases in which roentgen examination before admission led to suspicion of cancer of the esophagus. In most benign cases, the results of repeated roentgen examination with special attention to the suspected part will rule out the diagnosis of esophageal cancer, but the surest information depends on esophagoscopy, which is always indicated when roentgen examination shows an esophagitis-like picture. On account of the vague initial symptoms in cancer of the esophagus, the author favors roentgen examination even in cases in which there is not marked dysphagia.

Philippine Medical Association Journal, Manila

29:451-504 (Sept.) 1953

Dihydrostreptomycin in Leprosy Cases in Armed Forces of Philippines: Preliminary Report. D. M. Garduño.—p. 451.
Pathology of Old Age. B. Barrera.—p. 463.
Surgical Problems in the Aged. L. F. Torres Jr.—p. 467.
Almost Fatal Penicillin Anaphylactic-Like Shock Reaction: Report of Case at V. Luna General Hospital, (AFP). C. B. Icasiano.—p. 472.
Menarchial Postoperative Acute Hypoparathyroidism and Acute Hypothyroidism. P. T. Nery.—p. 477.

Practitioner, London

171:479-590 (Nov.) 1953. **Partial Index**

Fibroids and Their Management. R. J. Kellar.—p. 483.
Disturbances of Micturition in Women and Their Management. J. C. Moir.—p. 492.
Present Status of Hormone Therapy at Menopause. H. C. McLaren —p. 500.
Gynaecological Disorders in Old Age. W. I. C. Morris.—p. 514.
Salpingitis. C. M. Gwillim.—p. 521.
Tuberculosis of Female Genital Tract. P. Malpas.—p. 527.

Presse Médicale, Paris

61:1379-1396 (Oct. 24) 1953

Glucose Tolerance Test with Concurrent Determination of Glycemia and Pyruvemia in Diabetic Patients. R. Moreau, S. Bonfils, P.-M. de Traverse and G. Hadjissotiriou.—p. 1379.
*Epidemic Hepatitis or Hepatitis of Inoculation During Treatment with PAS in Infusions. E. Barré and A. Danrigal.—p. 1380.
*Antiatheromatous Properties of Heparin: Clinical and Biological Proofs. A. Tamchès.—p. 1382.
Functional Study of Ovarian Autograft Series. H. Lelièvre.—p. 1383.

Hepatitis and PAS.—Approximately 500 patients stayed in a 140-bed ward for male patients with tuberculosis throughout a period (January, 1952, to April, 1953) in which 29 cases of benign and 1 case of fatal hepatitis with jaundice occurred. The one fatality was believed to be due to a complication of tuberculosis rather than hepatitis alone. Those affected included 28 male tubercular patients who had received prolonged treatment with infusions of *p*-aminosalicylic acid (PAS), one intern, and one nurse. No hepatitis was found in the ward for female patients with tuberculosis, and none appeared in male patients treated with streptomycin and/or isoniazid or short courses of *p*-aminosalicylic acid in infusions. Hepatitis by inoculation was suspected, but apparently disproved by a program of greater strictness in the sterilization of equipment used in the infusions. This evidence, together with the cases of the nurse and the intern, suggested an epidemic hepatitis transmitted by the nasopharyngeal or the alimentary route. The authors point out that the two types of hepatitis do not appear in such different forms as general opinion holds. The conclusion is not that *p*-aminosalicylic acid is in itself toxic, but that its prolonged administration has a particular effect on the liver cells of male patients, making them peculiarly susceptible to hepatitis. The authors feel that this fact does not warrant the discard of *p*-aminosalicylic acid, especially in view of its great value in the treatment of tuberculosis; but they suggest that a detailed study be done of the effects of the drug on the livers of humans and experimental animals.

Antiatheromatous Properties of Heparin.—The author asserted in 1949 that heparin has angiotrophic and angiospasmolytic properties in addition to its anticoagulant function. In the present work, he adds to these attributes an antiatheromatous power of heparin, but considers insufficient the explanation offered by Graham and his colleagues for the mechanism of this action, namely, that heparin reduces the size of the elements of blood lipoproteins. This, says Tamchès, would prevent exacerbation of existent arterial lesions, but would not account for the amelioration of the arterial lesions of angina pectoris and cerebral arteritis brought about by treatment with heparin. Some other explanation must be found. Tamchès offers as clinical proof of the antiatheromatous properties of heparin his results with patients with any and all diseases of the circulatory system. His experience showed that synthetic anticoagulants such as ethyl biscoumacetate (Tromexan ethyl acetate) do not possess the antiatheromatous attributes that heparin does. He also points out two faults in the work of M. J. Binder and others (*J. A. M. A.* 151:967 [March 21] 1953): the choice of angina pectoris in its painful manifestations to illustrate the failure of heparin in the treatment of this disease and the choice of isotonic sodium chloride solution as a placebo medicament. Concerning the first point, it is pointed out that the effects of an anginal paroxysm are subjective and the causes multiple. Tamchès reports success with heparin in his cases of angina pectoris, as demonstrated by the disappearance of the characteristic electrocardiographic changes in the T-wave and the ST segment. In regard to the second point, Tamchès says it is dangerous to consider isotonic sodium chloride solution a neutral material in the circumstances, since it has been reported as being of value in the treatment of arterial diseases, notably thromboangiitis obliterans, coronary arteriosclerosis, and infarcts due to cardioangiosis. Tamchès concludes that heparin is the most valuable agent known today in the therapy of the vascular wall.

61:1397-1416 (Oct. 31) *1953*

*What Becomes of Heparin Injected Intravenously? Study of its Pattern of Elimination in Man. R. Fontaine, P. Mandel and Lux.—p. 1397.

On the Study of Resistance of Germs to Antibiotics. R. Mayoux, A. Bertoye, M. Carraz and J.-P. Rebattu.—p. 1398.

Technical Difficulties of Nitrogen Balance in Man: Importance of Previous Regimen. R. Lagier and M. Demole.—p. 1399.

New and Interesting Perspectives on Cytodiagnosis of Cancer. H. Hinglais and M. Hinglais.—p. 1401.

Ascites of Genital Origin in Woman. M. Roux and R. Mercier.—p. 1402.

Elimination of Heparin.—In order to find out what becomes of heparin injected intravenously, the authors studied its pattern of elimination in 13 healthy young subjects. In eight of nine who were each given 100 mg. of heparin, about 40% of it was found in the urine and the rest remained in the blood. One subject eliminated all of the heparin. Urinary elimination stopped entirely after 12 hours. In the four subjects who were each given 150 mg., urinary elimination of heparin was increased, without, however, exceeding 60%; it lasted more than 12 hours. It is certain that the fraction of the original heparin retained in the blood undergoes disintegration, but the mechanism involved in this is not known. The fact that when protamine is injected simultaneously with it, heparin does not appear in the urine seems to indicate that protamine favors the disintegration of heparin. Determination of the amount of heparin in the urine is considered to constitute an adequate control of the administration of the drug.

Proceedings of Royal Society of Medicine, London

46:799-900 (Oct.) 1953. **Partial Index**

Control of Tuberculosis: Preventive Measures in Chest Clinics. R. Grenville-Mathers and H. J. Trenchard.—p. 809.

Psittacosis: Recent Epidemiological Observations. J. C. N. Westwood. —p. 814.

The Patient with an Advanced Carcinoma of Bladder. N. Hudson. —p. 845.

Vaso-Epididymal Reflux Syndrome. A. W. Badenoch.—p. 847.

An Approach to Problem of Simple Enuresis. A. R. C. Higham.—p. 849.

Syndrome of Erythema Nodosum, Arthritis and Bilateral Hilar Gland Enlargement. M. M. Craig and D. G. Ferriman.—p. 867.

Revista Clínica Española, Madrid

50:261-332 (Aug. 31) 1953. **Partial Index**

Toxoplasmosis in Humans. J. M. Ales Reinlein and M. Ríos Mozo. —p. 261.

Changes of Thyroids in Prevention of Endemic Goiter with Iodized Salt. F. F. Rodríguez Moreno.—p. 270.

Conditions of Flocculability of Plasmatic Proteins. J. Carreras Pico, C. Santos Luengo and E. Aguirrezabal.—p. 290.

*Shoulder-Hand Syndrome. M. Losada L. and J. Zañartu O.—p. 298.

Shoulder-Hand Syndrome.—The shoulder-hand (Steinbrocker's) syndrome is a painful functional incapacity of the shoulder and of the hand of the same arm, with edema, circulatory and trophic disorders of the hand, without involvement of the elbow. The syndrome is generally unilateral. It develops in three progressive stages with irreversible lesions in the third stage. The subjects of this report were four women and two men between the ages of 44 and 77 years. The syndrome was complete in all cases. The disease was either in the first or in the second stage in five patients and at the beginning of the third stage in one. The right arm was involved in three cases and the left in two; in one the disease was bilateral. Pain and functional incapacity of the shoulder and of the hand were acute or subacute in all patients, except one in whom the functions of the hand were normal. Unilateral or bilateral fibrosis of the palmar aponeurosis was observed in three patients, including the patient with the bilateral syndrome. Roentgenography was made on the shoulder in five patients, on the hand in one, and on the spine in six. Moderate osteoporosis was observed in the shoulder of three patients and the hand of one. In the spine, arthrosis of the vertebrae on the side of the involved shoulder was observed in three cases and bilaterally in one. The disease was considered secondary to vertebral arthrosis in three cases, and in one case it followed myocardial infarct. All patients had local applications of heat followed by muscle massage and mild progressive mobilization for a period that varied from one to three months. In two patients with the disease in the first stage, the treatment produced a cure that remains unchanged six months after discontinuation of the treatment. Procaine (Novocaine) hydrochloride block of the stellate ganglion was done on three patients in the various stages of the disease. The treatment failed. In these three patients and in the other patient in the group, cortisone and kinesitherapy gave rapid excellent results that persist a year and a half after discontinuation of the treatment. Cortisone was given intramuscularly at different doses, up to a total dose of 5 or 5.5 gm. in a period of time that varied between two and a half and five months. The authors direct attention to the following facts: 1. Cortisone treatment makes surgery unnecessary in patients with the advanced stage of the shoulder-hand syndrome. 2. The drug produces marked improvement in the general condition of the patient and a feeling of well being. 3. The unpleasant effects of the drug are moderate and transient.

Revue du Rhumatisme, Paris

20:587-673 (Aug.-Sept.) 1953

Osteoarthropathy Due to Work in Caissons with Compressed Air. P. Ravault, P. Merer, L. Roche and G. Rayneau.—p. 587.

Cortisone, ACTH, and Tuberculosis: Clinical and Experimental Considerations. J. Baudot, J. Arlet and A. Delaude.—p. 600.

*Remarks on Osteoporosis of Castrated Women and Women After Menopause Based on Study of Vaginal Cytology in Such Patients. S. de Sèze, A. Mazabraud and M. Mazabraud.—p. 608.

Serologic Research in Chronic Inflammatory Rheumatism. F. Jacqueline, A. Eyquem and E. Jochem.—p. 617.

Osteoporosis and Vaginal Cytology.—This work is based on the concept of the close relation between the endocrine system and protein metabolism. Three different hormonal types in naturally postmenopausal or castrated women with osteoporosis were isolated by the authors, on the basis of stained vaginal smears from 13 such patients, 4 of whom were castrated, who had not received any previous hormone therapy. In the four castrated women and in one whose menopause had occurred abnormally early, there was evidence of both androgen and estrogen, the latter presumably of adrenal origin. In three patients, one of whom was castrated, an atrophic type indicating ovarian and adrenal senility was found. A mixed atrophic-estrogenic type appeared in six patients, all of whom had had natural menopause and one of whom had also showed the second type. This third type represents ovarian senility associated with adrenal cortical dysfunction. The authors conclude that lack of ovarian estrogens is not the sole hormonal factor causing osteoporosis in postmenopausal patients, since osteoporosis does not occur in all such patients. This study of vaginal cytology revealed that new hormonal states were brought about by suppression of ovarian activity in groups 1 and 2. This new state appears to depend on the adrenals as accessory gonads, and, without forgetting that castration and natural menopause are the prime movers in this osteoporosis, it seems possible to say that the hypophysioadrenal reaction is at least as important as the first cause itself.

Semaine des Hôpitaux de Paris

29:3369-3408 (Oct. 30) 1953

Hepatic Capsulitis as Evidence of Masked Cholecystitis: Cholesterolic Polyps of Gallbladder Diagnosed by Laparoscopy and Royer's Method of Angiocholography. J. Caroli, J. André, P. Ricordeau and A. Fourès.—p. 3369.
*Cryotherapy in Acne by Giraudeau's Technique and Associated Methods. P. de Graciansky, S. Boulle and M. Boulle.—p. 3373.
Analytic Study of Quick's Time Test in Hepatic Insufficiency by Differential Determinations of Prothrombin, Proconvertin, and Proaccelerin. D. Alagille, L. Hartmann and R. Fauvert.—p. 3375.
Major Nosographic Laws of Positive Psychiatry. M. Leconte.—p. 3387.

Cryotherapy in Acne.—Cryotherapy for the treatment of acne as first described by Giraudeau in 1929 consists of massaging the affected portion of the body with a mixture of carbon dioxide snow, acetone, and sulfur. The authors feel that this method should not be discarded, since it has proved its worth in the treatment of acne that is not amenable to iodized, sulfurized, or salicylized and resorcinized lotions and can be used without interrupting the patient's activity. It is particularly successful in curing papulopustular acne of young persons with fatty skin. It can be used in conjunction with ultraviolet irradiation and trichloroacetic acid to obtain a rather forceful simple desquamation or a true exfoliation that generally permits the patient to continue his normal routine.

Wiener medizinische Wochenschrift, Vienna

103:817-834 (Oct. 31) 1953

Genesis of Peripheral Disturbances of Blood Perfusion and Their Treatment. M. Ratschow.—p. 821.
Therapy and Prophylaxis of Reflex Disturbances of Circulation and Respiration in Course of Anesthesia. A. Benke.—p. 825.
*Contribution to Symptomatology and Therapy of Paget's Disease. R. Neugebauer.—p. 827.

Paget's Disease.—The occurrence of osteitis deformans is reported in a 64-year-old woman and in her 61-year-old brother. The bones of the skull, spine, and lower extremities were involved in the woman, and there was pronounced and generalized involvement of the bones in the man. The woman had myopia of 12 diopters, and the man had myopia of 15 diopters. The man's two children also had pronounced myopia of 12 and 15 diopters respectively. The serum alkaline phosphatase was strikingly elevated in the two patients with Paget's disease, but was normal in the two myopic children. The children did not have any changes in their bones. Both patients stated that their mother had had bowed legs, kyphosis, enlargement of the circumference of the head, and myopia. It is suggested that the pronounced myopia in the patients and in three additional members of their family may be related to Paget's disease in that it can be considered as a manifestation of general inferiority of the mesenchymal tissue. The high serum phosphatase content of 160 units (King-Armstrong) in the man induced the author to give corticotropin a therapeutic trial in this patient; 25 mg. of corticotropin combined with 1 gm. of a proprietary preparation of vitamin C (Myascorbin) divided in two intramuscular injections was given daily for 10 days. The alkaline serum phosphatase dropped from 160 units to 48 units (King-Armstrong). Pain in the legs and in the sacral region, which had been severe before the treatment, subsided completely, and the patient, a heavy manual laborer, was able to resume his work. It is suggested that the drop in serum phosphatase resulted from the inhibitory effect of the corticotropin on the osteoblasts, which are of mesenchymal origin and produce the phosphatase.

Ztschr. f. d. ges. innere Medizin, Leipzig

8:765-812 (Sept. 1) 1953. **Partial Index**

Nature and Treatment of Chronic Articular Rheumatism. T. Brugsch.—p. 765.
Withdrawal of Gastric Specimens for Cytodiagnosis with Aid of Flexible Forceps with Lateral Shearing-Out Device. H. Müller.—p. 779.
Demonstration of Hemoglobin and of Color of Stroma in Erythrocytes in Staining of Blood Smears According to Pappenheim. J. Brugsch, F. Kubowitz and E. Tichter.—p. 781.
*Diagnosis and Therapy of Endocarditis Lenta. H. C. Moeller, H. O. Dorscheid and H. J. Otte.—p. 782.
Antistreptolysin Reaction in Differential Diagnosis of Rheumatic Diseases. H. Seifert and H. Tichy.—p. 794.
White Blood Cell Picture in Peripheral Blood in Patients with Bronchial Carcinoma: Significance in Differential Diagnosis. F. H. Schulz and E. Kerrinnes.—p. 798.

Diagnosis and Therapy of Endocarditis Lenta.—Moeller and associates present observations on 18 patients with endocarditis lenta, in each of whom streptococci of the viridans group were cultured from the venous blood, including Streptococcus salvarius and enterococci. It was surprising that in several cases the primary culture revealed streptococci in the hanging drop, but when this material was inoculated into other mediums, no further growth resulted. Later cultures, however, confirmed the earlier microscopic findings. Streptococci of the viridans type were found also in the blood cultures of seven patients who did not have endocarditis lenta but who had malignant tumors or various infectious diseases, such as extrapulmonary tuberculosis, polyarthritis, or Douglas' abscess, and who also had focal infections. In order to establish the most effective antibiotic therapy, the causal organisms were tested in vitro for their sensitivity against penicillin, streptomycin, and chlortetracycline (Aureomycin). Depending on the outcome of the test, the patient was treated with penicillin, with penicillin alternating with chlortetracycline, or with the combined administration of penicillin and streptomycin. Six of the 18 patients with endocarditis lenta died; 4 may be considered as cured; and the remaining 8 patients have not been followed for a sufficient length of time to justify a final evaluation. Whereas penicillin either alone or in combination with streptomycin produced excellent results in some of the cases, the therapeutic effect of chlortetracycline was not unequivocally favorable.

Ztschr. f. Hygiene & Infektionskrankh., Heidelberg

137:541-642 (No. 6) 1953. **Partial Index**

*Epidemic of Typhoid Due to Contact with Infected Fish. H. Hompesch.—p. 541.
Culture of Leptospirae. H.-G. Gram.—p. 553.
Tolerance for and Efficacy of Drugs Used for Air Disinfection: Suitability of Triethylene Glycol for Air Disinfection. W. Maassen.—p. 566.
Investigations on Combat of Industrial Anthrax: Sanitary Measure in Leather Tanneries. E. Hailer and K. Heicken.—p. 611.

Epidemic of Typhoid Due to Contact with Infected Fish.—Hompesch describes an epidemic of typhoid that, after infection by water, milk, and meats had been ruled out, was traced to contact with fresh (unsalted) fish. At the time the cause of the epidemic was investigated, the fish could no longer be examined. It may have been contaminated by ice, which had been produced from possibly contaminated water. The 44 cases were in 30 women and 14 men. When the eight patients who contracted the typhoid secondarily from other members of the family (two females and six males) are disregarded, the predominance of women is even greater (28 women and 8 men). Some of the women were saleswomen who had sold the contaminated fish, and others were housewives who had prepared it. The author stresses that, in investigating epidemics, foods eaten only after cooking should not be overlooked. Especially if women greatly predominate in an epidemic, exposure to uncooked food should be considered as a source of infection.

BOOK REVIEWS

Hyperparathyroidism. By B. Marden Black, M.D., Associate Professor of Surgery, Mayo Foundation for Medical Education and Research, Graduate School, University of Minnesota, Minneapolis. Publication number 173, American Lecture Series, monograph in American Lectures in Endocrinology. Edited by Willard O. Thompson, M.D., Clinical Professor of Medicine, University of Illinois College of Medicine, Chicago. Cloth. $3.75. Pp. 119, with 19 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1953.

One of the most notable contributions to medical journalism in recent years has been the introduction of the American Lecture Series. The present monograph is a worthy addition to this group. The author, after a brief historical survey and discussion of the pathological physiology and pathology of hyperparathyroidism, discusses the clinical features, diagnosis, and surgical treatment of the disease. The illustrations and bibliographic references are well chosen. The book is clearly written and is adequately indexed. It has been well printed and has a flexible binding. It can be commended to the internist and urologist, on whom usually depends the recognition of this disorder, as well as to the surgeon who must treat it. Early recognition of this disease is essential if its devastating and irreversible effects on the kidney are to be avoided. Exact diagnosis is possible by available roentgenographic and biochemical methods, and surgical treatment if applied early will cure most patients except those with carcinoma of the parathyroids.

Atlas of Electroencephalography. Volume II: Epilepsy. By Frederic A. Gibbs and Erna L. Gibbs. Second edition. Cloth. $25. Pp. 422, with illustrations. Addison-Wesley Publishing Company, Inc., Cambridge 42, Mass., 1952.

The rapid advance made in the study of "brain waves" is demonstrated by this new edition. The first edition, published in 1941, was a one-volume collection of tracings. The present edition consists of three volumes, of which the book under review is the second. It deals specifically with epilepsy but, in addition to the reproduction of examples of brain-wave tracings, it summarizes statistical information drawn from the clinical records of nearly 12,000 patients with epilepsy and clarifies many controversial issues. Actual-size reproductions of patients' records have been faithfully traced. They constitute a permanent museum of the usual as well as the extraordinary. Because of the authors' long experience in treating patients of all ages, their work represents a blending of laboratory and clinical knowledge, a great asset in the consideration of so diffuse and controversial a subject as epilepsy. Of necessity both unusually large and heavy, the volume does not fit the usual library shelf, but, like the folio works of early anatomists, it should maintain its position of leadership in the important area of electroencephalography. Physicians concerned with epilepsy and with the working of the human brain should own a copy.

Regional Block: A Handbook for Use in the Clinical Practice of Medicine and Surgery. By Daniel C. Moore, M.D., Director, Department of Anesthesiology, Mason Clinic, Seattle. Cloth. $11. Pp. 373, with 262 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto 2B, 1953.

Because the blocking of nerves is a difficult and specialized procedure, it is best learned under the personal supervision and teaching of one skilled in the field. In this book Dr. Moore gives the reader such clear descriptions as to make them almost equivalent to personal teaching. There is a discussion of fundamental principles, the indications for regional blocks, the drugs available, and the reactions that may occur. The work is so organized that one may study any procedure without reading the entire book. Most of the nerve blocks in common use are discussed and described, with excellent diagrams, photographs, and directions. When alternative procedures are available, the author describes only the one that he prefers. An equally clear description of spinal and caudal anesthesia is included in a separate section. Not a general reference book, this work includes the practical considerations of what to do and how to do it. This work should be valuable to anesthesiologists, surgeons, obstetricians, and physicians in general practice who use regional anesthesia for minor procedures in the office.

World Directory of Medical Schools. [In English and French.] Cloth. $4; 25s; 1,200 French francs; 15 Swiss francs. Pp. 220. World Health Organization, Palais des Nations, Geneva, 1953.

The World Health Organization has made readily available information on medical schools throughout the world. The data, given alphabetically and in tabular form, includes the name, year of organization, administration, academic year, admission requirements, size of teaching staff, total enrollment, number of annual admissions, number of new students admitted annually, language used, length of course, degrees granted, annual number of graduates, and amount of tuition fees. Although the volume gives much valuable information, rather glaring errors appear in the section listing the schools in the United States. Total enrollments are not listed in the total enrollment column but in the annual new admission column. Since the directory acknowledges that this material was taken from THE JOURNAL, it could easily have avoided such an error by correct use of the list of Approved Medical Schools in the United States, published annually, in which data on enrollment in each class as well as total enrollment are given. If material from other nations has been handled in the same manner, data concerning annual admissions and total enrollments would be quite inaccurate, and it is hoped that subsequent editions will eliminate such errors.

Understanding Boys. By Clarence G. Moser. Cloth. $2.50. Pp. 190, with illustrations. Association Press, National Council of the Y. M. C. A., 291 Broadway, New York 7, 1953.

A nonmedical writer has written about the problems of growing up. This is directed to adults who are the parents or friends of boys, in order that they may have a better insight into the physical, social, and emotional growth patterns characteristic of boys between birth and maturity. Girls are mentioned only as they fit into these patterns of adolescence. It is reasonable that the author should concentrate on boys because of his experience in the group work activities of the Y. M. C. A. The material is reasonably accurate though elementary; it is presented in a pleasing manner but is repetitious. After following the boys' physical, mental, social, and emotional growth independently, the author proceeds to develop these in parallel for various age periods. Because of the repetition, this book is useful chiefly as a reference work for picking up ideas about the problems of boys of a particular age. This is the kind of volume that could be suggested by the family physician to help his patients better to understand their boys.

The Alkaloids: Chemistry and Physiology. Volume III. Edited by R. H. F. Manske and H. L. Holmes. Cloth. $11. Pp. 422, with illustrations. Academic Press, Inc., 125 E. 23rd St., New York 10, 1953.

The subject matter in this volume covers the chemistry of the following groups of alkaloids: cinchona, quinazoline, lupin, imidazole, solanum, veratrum, β-phenethylamine, ephedra, and ipecac. Although the subtitle is "Chemistry and Physiology," a minimum of information on the physiology of these alkaloids is included. As in the first two volumes, the authors are well known in their fields, the editing appears to have been thorough, the index is extensive, and the book is well printed.

These book reviews have been prepared by competent authorities but do not represent the opinions of any official bodies unless specifically so stated.

Childbirth without Fear: The Principles and Practice of Natural Childbirth. By Grantly Dick Read, M.A., M.D. Second edition. Cloth. $3. Pp. 298, with 30 illustrations. Harper & Brothers, 49 E. 33rd St., New York 16, 1953.

The first edition of this book was published in 1942 when Read was a relatively unknown English obstetrician. This present revised and enlarged edition is introduced after the widespread discussion of the author's philosophy and extensive experiences with it in many parts of the world. Five chapters have been added, including a sketchy description of the anatomy and physiology of reproduction, some prenatal dietary instructions, and the physical and emotional benefits of breast feeding and rooming-in. The chapter on prenatal and postnatal exercises is well illustrated. The basic philosophy presented is that ignorance of the childbearing function engenders fear; fear causes tension; and tension interferes with the normal process of labor and causes pain. The author attacks this problem by banishing fear through lay education and the participation of the mother in this most important physiological function. This concept did not originate with Read nor does he take credit for it. He has, however, devoted most of his professional life to popularizing this philosophy with patients and the profession. His success in bringing his ideas to the attention of persons in many parts of the world is the result of his drive and energy. Training for childbirth has resulted in a tremendous change in our pattern of maternity care. Lay education, exercises, and the indoctrination of mothers have decreased the average length of labor, the use of sedatives, and the number of major operative interventions. Natural delivery, however, is not the goal for every woman nor need it be considered as the ideal for American obstetrics. It has been demonstrated that delivery under regional anesthesia following episiotomy is a better procedure for mothers and babies under ideal circumstances. There are major parts of the world, however, where natural delivery has always been the rule and will continue to be the method of choice.

This book was written for the lay person as a prenatal primer. Its purpose is to indoctrinate the mother for childbirth without fear. To this end much of the harangue about the abuse of pain relief, the frequency of operative deliveries, the lack of a moral conscience by many physicians serves no good purpose. If this discussion does anything, it dispels the emotional calm that the text is supposed to instill and leaves in its place a state of turmoil. The last chapter in particular is the hue and cry of a martyr in the cause of safer motherhood. The author deplores the lack of acceptance of all of his ideas by a critical profession. He can rest secure in the belief that his work has borne fruit in the more wholesome, the more normal approach to pregnancy and labor. It can truly be said that he has not labored in vain. His book should be read by all physicians who practice obstetrics. Although there is much in it with which many of them will disagree, it contains a great deal of sound philosophy that will lead to safer and saner obstetrics. For the lay public, however, there are several texts available that expound the philosophy of childbearing without fear in a more wholesome manner.

Die Kreuzschmerzen der Frau: Ihre Deutung und Behandlung; gynäkologische Orthopädie. Von Prof. Dr. Heinrich Martius, Direktor der Universitäts-Frauenklinik, Göttingen. Fourth edition. Cloth. 19.50 marks. Pp. 166, with 73 illustrations by Käthe Droysen. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart-O; agents for U. S. A., Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1953.

Pain in the lumbar and sacral regions in women may have either an orthopedic or a gynecologic explanation. The varying emphasis given in the past to one or the other of these alternatives is reviewed in the prefaces and opening pages of this book, and the author makes an effort to give a balanced presentation of both factors. There is a good summary of recommended methods of examination. The book closes with a meager presentation of original data. Since the author has access to a rich source of clinical material, it is hoped that in subsequent editions he will employ statistical helps beyond the simple computation of averages and percentages. The book has an excellent bibliography and is well indexed, beautifully illustrated, and attractively bound.

Human Behavior in the Concentration Camp. By Dr. Elie A. Cohen. Translated from the Dutch by M. H. Braaksman. Cloth. $5. Pp. 295. W. W. Norton & Company, Inc., 101 Fifth Avenue, New York 3, 1953.

This book was written by a Dutch physician who was himself a prisoner of the Nazis in a camp where wholesale exterminations were carried out. Although his family was sent to the gas chambers and he was subjected to unbelievably bad conditions, he has written with astonishing objectivity. The first half of the book describes the general and medical aspects of the German concentration camps, and although it forms a necessary background for the last half it contains little that has not been published previously. One point that stands out above all others is the farcical character of sanitation and medical treatment in a camp where the prime object was to destroy life, not to save it. The author also has something to say about the inhuman experiments performed on prisoners by German physicians. Although the number of these physicians was relatively small, they reported their experiments in detail to "scientific" meetings attended by a large representation of the German medical profession, and no one raised any objection to the procedures used on either scientific or humanitarian grounds.

The second half of the book is a study of the psychology of the prisoners and of their jailers. This part is of great interest and should be of value to psychologists and psychiatrists, despite the author's tendency to be repetitious. In the foreword Dr. Binger states, "Dr. Cohen tells us, from his personal experience, that the determining factor in the prisoner's initial reaction to life in a concentration camp was his conception of what would happen to him. The closer this conception came to reality the less violent was his reaction. The author leaves us in no doubt as to what would happen to us."

The author ably sums up his findings in a final chapter that should be widely read. He offers convincing proof of the physical and mental adaptability of human beings. In one place he states: "In my view it is not the German as such, but the German individual *malformed* through his German education, that is the determining factor in the behavior of the German people." He throws interesting light on the reasons for the almost nonexistence of neuroses among the prisoners and says: "One would wish that the attention of people could often and for long periods be occupied by events which are of great moment to all. Perhaps they would take less interest then in being ill, with the possible result that the percentage of sick people would be smaller than it now is. It is deplorable that, to all appearances, this desirable state of affairs should be restricted to tensions inherent in war and the danger of war." One cannot help thinking that if there is such a thing as a master race it is made up of the persons who could survive the ordeal of the concentration camps. There is an extensive bibliography but, unfortunately, no index.

Basic Problems in Psychiatry. Editor, Joseph Wortis, M.D. Contributors, Joseph Wortis, M.D., and others. Cloth. $4.50. Pp. 186, with 3 illustrations. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1953.

This readable little book is an outgrowth of a lecture series for the house staff and community physicians, given at the Jewish Hospital of Brooklyn. The six contributors and the editor, all qualified psychiatrists and psychologists, bring from their varied clinical and research experiences a critique of present day psychiatry. W. Horsley Gantt summarizes the results of Pavlovian conditioned reflex experiments. Paul Hoch compares the various "schools" of psychiatry. Other authors discuss the influence of culture, the validity of psychological tests, the choice of psychosomatic symptoms, and the limitations of psychiatry. The result is somewhat uneven and definitely individualistic. Two contributors append a bibliography. The book might be considered a minority report aimed at the complacency of those who believe that psychiatry already knows most of the answers. The plea of the editor is for a common sense approach based on data verifiable in the laboratory. Psychiatrists will find the book interesting and provocative.

QUERIES AND MINOR NOTES

PROTECTION AGAINST TUBERCULOUS INFECTION

To the Editor:—*What would be adequate protection against infection for a person taking laryngeal swabs from tuberculous patients?*

M.D., Canada.

Answer.—Taking laryngeal swabs from tuberculous patients is perhaps the most dangerous of all antituberculosis measures. There is bound to be explosive coughing occasionally, and the large droplets of mucus will be thrown out into the face. It is much more hazardous than coughing during a physical examination, as the coughs for the latter are usually light and not explosive. The precautions, therefore, are the same as for bronchoscopy, i. e., the wearing of a heavy gauze mask, gowns, and preferably a transparent shield to protect the eyes. After each session a washing of the face and eyes is recommended.

LUMBAR PUNCTURE HEADACHE AND SPINAL ANESTHESIA

To the Editor:—*Why is there such a high incidence of headaches following the use of heavy dibucaine (Nupercaine) hydrochloride in saddle block anesthesia and almost none with the use of procaine crystals combined with dextrose and epinephrine for prolonged spinal anesthesia?*

M.D., Texas.

Answer.—It is generally accepted that post-lumbar-puncture headache is the result of a change in hydrostatic pressure in the areas occupied by cerebrospinal fluid in the brain. In a small percentage of patients, such headaches develop after transurethral resection performed while they were under the influence of spinal anesthesia. As a rule, however, these patients are not young and seldom are nervous or overly worried. They receive quantities of fluids, and the production of cerebrospinal fluid seems to be adequate. Ordinarily, headache seldom develops.

On the other hand heavy dibucaine (Nupercaine) hydrochloride for saddle block anesthesia generally is used for the obstetric patient. Such a patient usually is nervous and worried until her child is born and she can see that it is in a satisfactory condition. Often, if labor has been prolonged, she is dehydrated and tired, so that she may sleep for many hours without taking fluid. Lactation begins, and the breasts are painful. If the child is breastfed, it removes a certain amount of fluid from the mother. When post-lumbar-puncture headache develops in such a patient, it is likely that it will not last long. Treatment consists in the insertion of a needle in the caudal canal and the injection of 50 cc. of a 6% solution of dextran in isotonic sodium chloride solution. The patient then is asked to sit up for three hours and to drink water freely. Most of these patients will be relieved of their headache at that time and from then on.

Because the bony canal of the spinal column will not yield and the space between the bone and dura is filled with fluid that likewise will not yield, it appears to overcome the disturbance of cerebrospinal fluid incident to the production of spinal anesthesia and brings about a balance of intracranial hydrostatic pressure. Spinal puncture headache also has been treated by a second lumbar puncture and injection of a solution of sodium chloride with the patient in the sitting position until the headache disappears. It is difficult to say whether the local anesthetic agent used is in itself an important factor.

Repair of inguinal hernia with the patient under the influence of spinal anesthesia is followed by a headache less frequently than when saddle block anesthesia is employed for obstetrics but oftener than when transurethral resection is performed with this form of anesthesia. There are perhaps more factors involved in post-lumbar-puncture headache than are mentioned here, but the essential factor is disturbance of intracranial hydrostatic pressure.

INJECTIONS BY LAYMEN

To the Editor:—*Are there any legal or ethical restrictions on a layman's giving intramuscular injections of medication prescribed by a physician? The person who wishes to give the injections is not a laboratory technician nor an aide nor a nurse, but is trained in bacteriology and chemistry and has given hypodermic needle injections to animals. A licensed physician can be available for some demonstration of proper technique but would not be present at every injection. Is this person qualified to give penicillin or insulin shots or any other similar shots as needed by a patient under care of a physician?*

Ph.D., Illinois.

Answer.—Assuming that the physician has personally made the diagnosis and prescribed the injection, he may delegate to a trained lay person the merely mechanical operation of performing the injection. The physician should be well satisfied that the lay person is properly and adequately trained in the necessary technique, however, because he will be responsible for any injuries that arise as a result of such lay person's negligence. A physician may not delegate to a lay person the performance of any act requiring the exercise of professional discretion or judgment.

ELECTRODE JELLY USED IN ELECTROCARDIOGRAPHY

To the Editor:—*Please give the formula of the electrode jelly used in electrocardiography for the appliance of electrodes.*

Ruben Gandelmann, M.D., Brazil, South America.

Answer.—The formula for one form of electrode jelly that has been extensively used is given by Jenks and Graybiel in the *American Heart Journal* (10:693, 1935), from which the following formula is quoted.

In its initial form the mixture contained: sodium chloride, 6½ lb. [2,948 gm.]; pumice [powder], 8 lb. [3,629 gm.]; gum tragacanth, 8 oz. [227 gm.]; potassium bitartrate, 4 oz. [113 gm.]; glycerin, 24 oz. [680 gm.]; carbolic acid, 1 oz. [23 gm.] and water, 2 gal. [8 liters].

The gum tragacanth and glycerin are heated in half the volume of water for six hours. The potassium bitartrate and sodium chloride are dissolved in the remaining volume of water and added. The resulting mixture is stirred thoroughly with an electric mixer and heated again for an hour. The carbolic acid and pumice are then added, together with more water if necessary, and the whole again mixed until of a creamy consistency.

In actual use a small quantity of the paste is rubbed briskly onto the desired skin area, leaving a small surplus to facilitate contact with the electrode. The electrode, a German silver plate about 5 by 8 cm., is firmly applied over this area and held by means of an elastic ribbon or band. The patient usually notices a slight burning sensation, but none has complained of any pain or discomfort. While no instance of skin irritation from this paste has occurred in a large number of patients, the usual caution should be observed with anyone having extremely sensitive skin.

Within reasonable limits, the size of the electrode is immaterial so far as skin resistance and polarization of the electrode are concerned. Resistance measured on the electro-

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The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

cardiograph, using the above electrodes and paste, is, in most cases, about 1,000 ohms and rarely as high as 2,000 ohms. This applies equally to myxedematous, cachectic, or Negro patients, from whom it is sometimes difficult or impossible to obtain satisfactory tracings. Electrocardiographic tests made on patients in the wards of the Massachusetts General Hospital (about 400 cases) showed very uniform results, with resistances of from 1,000 to 2,000 ohms and no overshooting.

CANCER IN RETAINED CERVICES

To the Editor:—*With reference to the controversy about total as opposed to subtotal hysterectomy, in what percentage of retained cervices does carcinoma develop? In what percentage does carcinoma develop when electrical conization is done?* *R. B. Robins, M.D., Camden, Ark.*

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—No acceptable way is known of determining in what percentage of cervical stumps cancer develops, because carcinoma in situ or early invasive cancer may be present at the time of the original operation. Most gynecologists consider cancer that becomes detectable before two years have elapsed as having been present at the time of the hysterectomy. Statistics of numerous tumor centers give an incidence of 2.5% of cervical cancer in stumps. It is logical to believe that the stump is as vulnerable as the cervix attached to the uterus and that the incidence would be the same as for the total population. This varies with race and geographical location. As to the incidence of cancer following cauterization and conization, one would assume that the reports of Pemberton and Smith or Cashman, dealing with cancer of the cervix following cautery, conization, repair or amputation, would be applicable.

Answer.—A composite of several large series of cervical stumps indicates about a 4% incidence of carcinoma. This is a significant percentage. Other factors that bear on this problem concern 18,562 patients who received adequate treatment for irradiative lesions of the cervix; in only 15 of these was cancer known to have developed later. Of another group of 2,255 patients in whom invasive carcinoma was present, only 33 had received adequate treatment of preexisting cervical lesions.

EXTRACTION OF TEETH

To the Editor:—*At our institution we have had considerable discussion on the advisability of giving antibiotics after the extraction of teeth. Your opinion will be very much appreciated.* *M.D., Alabama.*

Answer.—Penicillin should be given to patients after tooth extraction when rheumatic heart disease or congenital heart disease is present. Also, in the presence of a definite infection, penicillin or other antibiotics should be administered. The incidence of bacteremia following tooth extraction is decreased by antibiotic therapy. Although it has been shown that Streptococcus viridans may still circulate in the blood after such chemoprophylaxis, implantation of the organisms on damaged heart valves is, for the most part, prevented, and subacute bacterial endocarditis does not develop, except in those instances in which penicillin-resistant bacteria produce the bacteremia. While the presence of congenital or rheumatic heart disease are absolute indications for chemoprophylaxis, it is probably best also to give patients with arteriosclerotic heart disease the same type of treatment since occasionally this type of cardiac damage may be involved in the development of subacute bacterial endocarditis if bacteremia occurs.

It is impossible, on the basis of the presently available information, to make an authoritative statement in regard to penicillin prophylaxis in dental extraction in all patients. There is little doubt that such management will reduce the number of local complications caused by bacterial invasion, osteomyelitis of the jaw, and cellulitis of the floor of the mouth (Ludwig's angina), for example. The application of such universal chemoprophylaxis must be evaluated, however, in the light of the rarity of secondary bacterial infections following careful dental extraction and the increasing frequency of serious reactions to penicillin and other antibiotics. Because of the increasing number of reports of severe and even fatal reactions to various antibacterial drugs, their use is best restricted to specific situations where prophylaxis is obviously indicated, such as heart disease or infection of the dental structures.

ASTHMA

To the Editor:—*A 72-year-old man living in Denver has asthma. A lower altitude relieves the severity of his symptoms. Would it be worth while to give corticotropin (ACTH) hypodermically? He has taken cortisone by mouth, but the side-effects made him uncomfortable.* *M.D., Kansas.*

Answer.—Most cases of asthma do not require corticotropin (ACTH) or cortisone for symptomatic relief. It is assumed, therefore, that the customary medication, such as ephedrine, racephedrine, aminophylline, iodides, and isopropyl epinephrine sprays, and a search for a causative factor have been unsuccessful. The nature of the side-effects from cortisone is not mentioned. Some of these are due to mineral, protein, and similar metabolic changes that are adjustable by dietary regulations. In some instances, hydrocortisone (Compound F) may be tolerated better than cortisone. The dose is approximately the same. Corticotropin produces very much the same side-effects as cortisone, although it may in some instances be effective in small enough doses to make such reactions minimal. It should be ascertained that the patient does not have the usual contraindications (hypertension, coronary disease, diabetes, and so forth) to the use of corticotropin. A reasonable initial dose is 40 units of the slow absorbing preparation injected intramuscularly twice daily. If there are no results after 48 hours, the dose should be increased. If relief is attained, the dose may be gradually lowered at about two to three day intervals until the maintenance dose is established. In many cases it may be possible to administer the maintenance dose once a day.

STERILIZATION OF RUBBER GLOVES

To the Editor:—*Please state the proper method for cold sterilization or suitable cleansing of rubber gloves used for vaginal and rectal examination. Lysol seems to cause some deterioration even though there is adequate rinsing.* *Elmer F. Gooel, M.D., Beverly Hills, Calif.*

Answer.—Rubber gloves employed for vaginal or rectal examination should be thoroughly washed with soap and water after use. Chemical disinfection may be accomplished by soaking them overnight in 70% alcohol; 2% Amphyl (a combination of alkyl and halogen phenol derivatives); or a 38% formaldehyde solution containing 135 cc. of Formalin (38%), 10 gm. of sodium hydroxide, and distilled water to make 1 liter. Following this, the gloves must be thoroughly rinsed to remove all traces of disinfectant. Because chemical disinfection does not provide the degree of safety afforded by steam under pressure, rubber gloves to be used in surgical procedures must be autoclaved. Rubber gloves known to have been exposed to contamination with spore-bearing organisms should be destroyed.

ABDOMINAL REFLEXES

To the Editor:—*Is there any significant difference in the abdominal reflexes of the male and female?* *M.D., Alabama.*

Answer.—There is no significant difference in the abdominal reflexes of the male and female, except that the abdominal wall that has been stretched by pregnancy often is devoid of reflexes. The same is true of the very abdomen, whether in a man or woman.

MÉNIÈRE'S DISEASE

To the Editor:—*A married woman, 30 years of age, has had Ménière's disease for four years. Her attacks of dizziness are frequent and short. Hearing tests show a 20% diminution in the left ear. Caloric tests show an exaggerated left labyrinth response. Are nicotinic acid, thiamine chloride, and neostigmine bromide still thought to be of value? Of what value is the operation of cutting the chorda tympani nerve? By what measures could the exact cause be determined?*

Leon Paris, M.D., Bronx, N. Y.

Answer.—Early Ménière's disease (labyrinthine hydrops) frequently responds to vasodilators such as nicotinic acid or histamine. The assumption is that the disturbed endolymphatic fluid pressure is the result of disturbed vasomotor control of the circulation to the inner ear, probably owing to arterial spasm. The operation mentioned is not consistent with what is known of the pathology of this condition and is not generally accepted as an effective treatment for the condition. With regard to the etiology, about 10% of cases appear to be of allergic origin. If the patient has any other allergic symptoms, investigation of a possible allergic factor should be undertaken. Allergy to tobacco in the form of cigarette smoke is fairly common. However, in the great majority of cases no specific etiological factor can be found, and the cause remains unknown.

EFFECT OF PHOTOGRAPHIC FLASHLIGHT ON THE EYES

To the Editor:—*I am inquiring about photographic flashlight, especially electronic flash, about 1/1,000 second of 16 lumen seconds of light per square foot at 9 ft. Pictures of babies, even newborn infants, are often taken in dim rooms, with the pupils fully dilated and the baby staring at the camera. Can this harm the eyes?*

M.D., Arkansas.

Answer.—The amount of light reaching the subject has apparently been measured as 16 lumen seconds per square foot and delivered in the course of about 1/1,000 second. Theoretically there is insufficient ultraviolet or infrared radiation from the standard electronic discharge tube to be harmful to the exterior or interior of the eye, even when the gaze is directed on the light source, unless the intensity is many times greater than that indicated. Nor have any indisputable cases of eye lesions been reported even though current photographic procedures commonly expose the eye to electronic flashes at a distance much closer than 9 ft. (about 3 m.). No ophthalmoscopic nor microscopic abnormalities were produced in the eyes of chinchilla rabbits by exposures of more than 2,000 lumen seconds from a discharge tube at a distance of 3 in. (7.5 cm.).

VACCINATION OF CHILD WITH ECZEMA

To the Editor:—*It is important to correct your consultant on his recommendation to vaccinate a child with atopic dermatitis (Queries and Minor Notes,* J. A. M. A. **152:***1392 [Aug. 1] 1953). Vaccination of allergic eczematous children may lead to severe or even fatal generalized vaccinia. No precautions are adequate to prevent the spread of the virus after inoculation into the eczematous damaged skin. The vaccinia virus can be disseminated by the general circulation. Such a risk would be warranted only after intimate exposure of the child to smallpox. Furthermore, the suggestion contained in the minor note (Queries and Minor Notes,* J. A. M. A. **153:***694 [Oct. 17] 1953) recommending the skeptophylactic method of vaccination seems ill-advised. Any exposure of the eczematous child to the vaccinia virus carries a high risk, whether by injection, scarification, or even contact with other freshly vaccinated persons.*

This last mentioned exposure is responsible for the variciform eruption described by Kaposi and seen predominantly on atopic eczematous skin. Such skin is peculiarly susceptible to infection by vaccinia or herpes virus (Fries, J. H.; Borne, S., and Barnes, H. L.: Varicelliform Eruption of Kaposi Due to Vaccinia Virus Complicating Atopic Eczema, J. Pediat. **32:***532, 1948; Fries, J. H., and Borne, S.: Vaccinial Infection in Children with Atopic Dermatitis,* J. Allergy **20:***222, 1949). The resulting vaccinial eruption appears identical regardless of which of these organisms is the causative agent.*

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To the Editor:—*In* The Journal, *Aug. 1, 1953, page 1392, and Oct. 17, 1953, page 694, there are three items regarding smallpox vaccination of a child with eczema and its isolation from siblings who are being vaccinated. In an eczematous infant later under my care, generalized vaccinia and staphylococcic septicemia developed after vaccination of an older brother. The case was diagnosed as smallpox by consultants in a large general hospital, and an extensive emergency vaccination campaign followed the smallpox scare.*

The physician who vaccinated the older brother had immediately covered the site of inoculation by wrapping the entire upper arm with many turns of gauze bandage and anchored it with adhesive tape so that it could not be moved or the fingers inserted beneath it. This bandage was not removed until after the infant brother broke out with generalized vaccinia 12 days later. It appeared to me that transfer of the vaccine virus must have been through the saliva, respiratory mouth spray, or some other secretion or excretion of the older brother.

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ANGINA-LIKE PAINS

To the Editor:—*Concerning the query in* The Journal, *Dec. 5, 1953, page 1328, on angina-like pains, attention should be drawn to recent work (Machella, T. E.; Dworken, H. J., and Biel, F. J.:* Ann. Int. Med. **37:***543, 1952; Dworken, H. J.; Biel, F. J., and Machella, T. E.:* Gastroenterology **22:***222, 1952) indicating that periodic distention of the splenic flexure of the colon may explain these symptoms. In such cases, spontaneous pain in the substernal area, left side of the chest, or left shoulder or upper arm is associated with fluoroscopic evidence of gas in the splenic flexure. The pain is relieved by passage of flatus or defecation and may be accurately reproduced by balloon distention of the splenic flexure. The syndrome is seen mainly in patients with irritable colon and, though her bowel habits are not mentioned, the temperament of the patient described is the type frequently encountered in the latter condition. Treatment is supportive and is directed toward restitution of bowel function, reassurance as to the absence of serious disease, and discussion of inciting personal problems.*

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TREATMENT OF HODGKIN'S DISEASE

To the Editor:—*The outline of treatment for Hodgkin's disease in Queries and Minor Notes in* The Journal, *Oct. 24, 1953, page 774, contains a misstatement and an omission. The advice that "absorbable forms of iron should be frequently administered" is contrary to good hematological practice. Iron is indicated in Hodgkin's disease only if a hypochromic (iron deficiency) anemia exists. The usual type of anemia in Hodgkin's disease is not on an iron deficiency basis and does not respond to the administration of iron. The omission concerns triethylene melamine (TEM), which has been shown to be an effective oral agent in the treatment of Hodgkin's disease (*Am. J. Med. *15:684, 1953;* Blood *7:483, ibid. 7:729, 1952;* Brit. M. J. *1:59, 1953).*

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